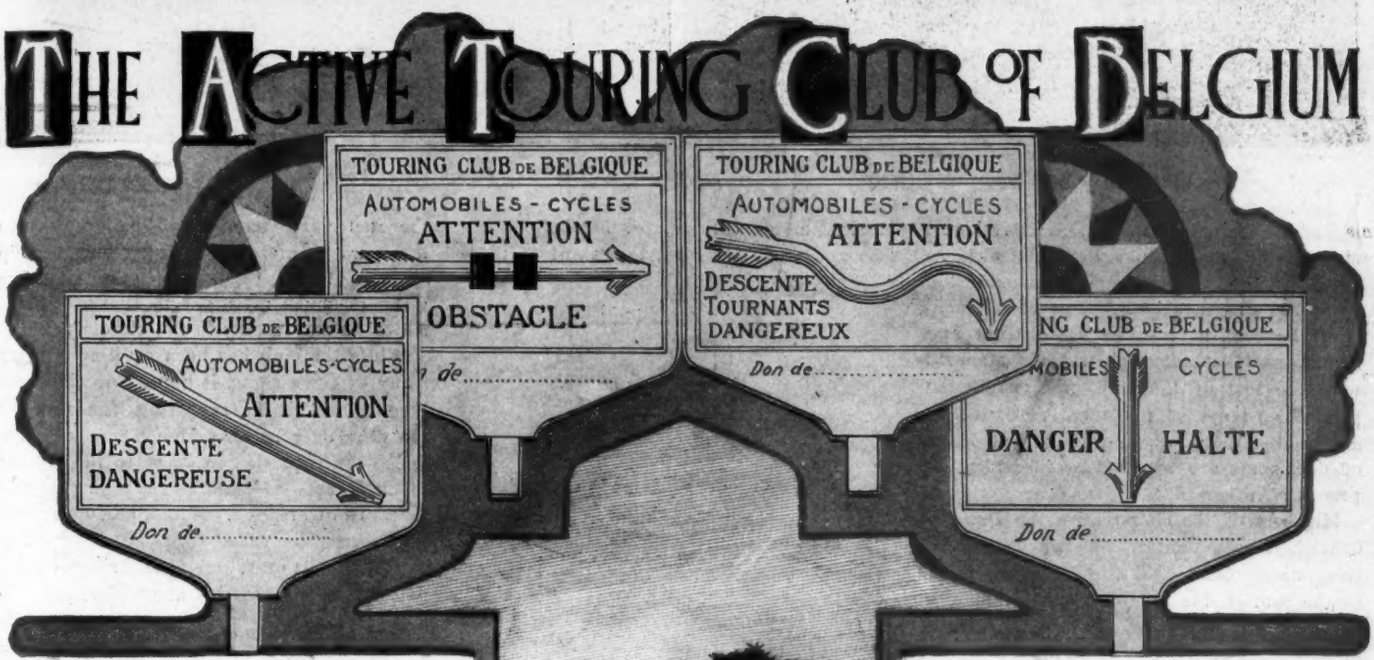
VOL. XIV No. 20 CHICAGO, NOVEMBER 12, 1908 $3.00 PER YEAR

MOTOR AGE

THE ACTIVE TOURING CLUB OF BELGIUM



BRUSSELS, Oct. 27—The Touring Club of Belgium was founded February 22, 1895, and now, after a little more than 13 years of existence there are more than 33,000 members in the organization, about 3,500 being motorists. To the average American who is used to big figures 33,000 may not be an extraordinarily large figure, it may not even strike him that a club with 33,000 members is worth while talking much about. However, he should bear in mind that Belgium, little Belgium, has 7,200,000 inhabitants or just about as many people as there are to be found in New York and Chicago put together. This alone should be a convincing proof of the importance of the touring club of Belgium.

Instead of its object being to cater to only one class of tourists, the cyclists, as most continental touring organizations have done for a long time, the Belgian club, from the time of its birth had consistently favored every kind of touring, be it bicycle, motor car, railroad, steamship, horseback, etc. Thus, it is not surprising that within a rather short period and in a little country the club has been able to grow so rapidly, to become in fact the third largest touring body in the world. It might be thought that such a big club would occupy a building of some pretensions, a house that would through its impressiveness attract the attention of the passer-by. How many organizations in the United States having fewer members and of less importance occupy fine club houses? There are a great many. But here in old Europe people are not so particular. Thus the American tourist who may be coming to this city and may seek information at the Belgian Touring Club will find the building—a three-story brick house—at 4 Passage de la Bibliotheque. This is a queer name for the street which is in reality not a street but a very small square in the middle of which is the statute of General Belliard. In the rear of this square is a long stairway leading down to an ancient street in the old section of the town. There are only three houses on the so-called passage, or street—a private residence on one side, a hotel and café on the opposite side and next to it, overlooking the old street which is some 50 feet below, the home of the Touring Club de Belgique.

ON THE TILFF ROAD NEAR LIEGE

Sometimes one may see three or four motor cars in front of the big door before 9 a. m., when the office hours begin. And when one comes a few hours later the small-sized offices or rooms are sometimes so filled with information seekers that one again wonders why so powerful and useful an organization does not occupy more spacious quarters. But Americans must not forget that this is not the United States and that the people here are most always satisfied, be they counts or princes, office clerks or traveling men, with the things as they are, even if they are centuries old.

There are three classes of members that belong to the Belgian touring club. Active members pay annually 3 francs—60 cents—as dues and are admitted upon application to the administration committee, provided the application is countersigned by two club members or if good references are fur-

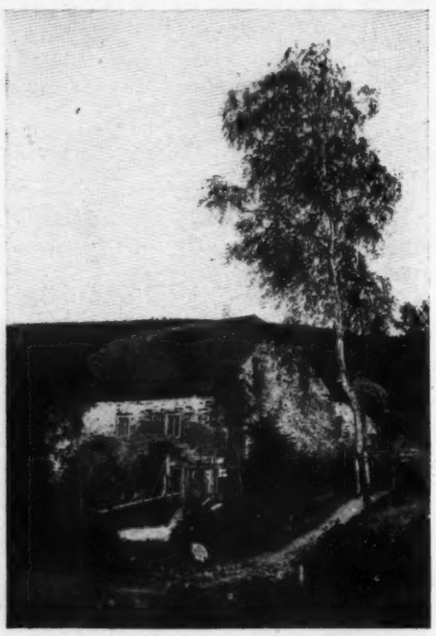
FINE ROADWAY FOUND NEAR OXHE

BARSE FARM LOCATED AT HOYOUX

nished. Foreign members, that is residents outside of Belgium, pay the same dues as do the active members. Life membership costs 100 francs or $20. The membership card, bearing the member's signature and containing his photograph which is stamped with the seal of the club, will enable the possessor to receive registered mail, collect money orders, etc., where ordinarily all kinds of documents are required as identification proofs at other places.

Members of the club receive the Bulletin Officiel, a semi-monthly illustrated publication, which contains information of value to the tourist, the annual annuary and the manuel de conversation, which is published in five languages. The library of the club is, of course, at the disposal of its members and it contains a large collection of maps from countries, states, sections of roads, books having relation to touring in various countries of Europe, the principal motor, bicycle and other sporting journals published in the old world, etc. Every day brief information just received from members who are traveling is posted on a special board in the reading room. The president d'honneur of the Touring Club of Belgium is Prince Albert.

The work of the club is divided into more than a score of departments, the principal ones being sign boards, roads, customs, itineraries, motor cars, maps, hotels, publications. One of the most important of these is the sign board department. At first these guides were put up only for the benefit of cyclists but during the last few years, with the increasing number of motor cars in the country and the growing membership amongst motor car owners, the club has given as much attention to the roads that motorists may use as to the bicycle needs.

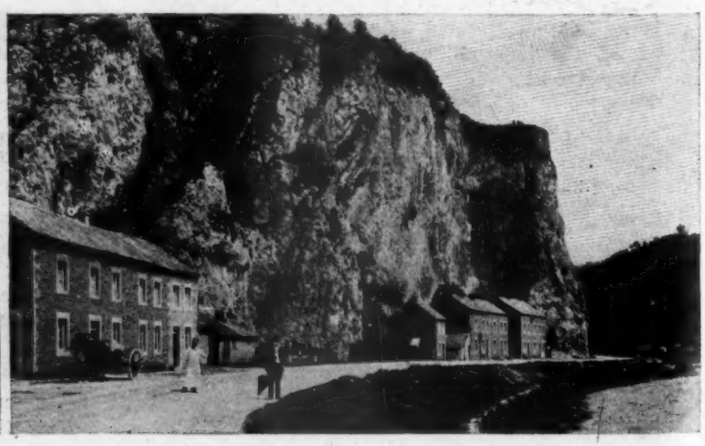


MILL OF ROHIER NEAR LIEUNE

While the club has been erecting a great many of these signs, it appeals to the members to aid it in supplying funds to do the work on a larger scale. Those who subscribe are requested to do so to the amount of 20 francs—$4—and as the sign post and the work of erection, all told, cost 50 francs, the subscription asked for is not beyond reason. As a reward, the subscriber or donator of a post has his name placed on the post and has the privilege of naming its location. These posts are made of iron and are painted blue and white.

At present four different signs are being used. The first one with an arrow pointed down perpendicularly and with the words, "Danger! Halte!" is a warning signal. The second sign consists of an arrow which is inclined to a degree of 45 per cent and bears the words, "Descente Dangereuse. Attention." The third sign consists of an undulated or waved arrow and with the inscription, "Attention. Descente Tournants Dangereux." If these remarks apply to a road where there is no turn, then the word "Tournants" is not on the sign. The fourth sign bears a horizontal arrow crossed

ROAD SCENE NEAR VISE



ROCKS AT CAMBLAIN AU PONT

CHURCH OF COMBLOIN LA TOUR

WINDING ROAD NEAR RANSA

by two black heavy lines and having for inscription, "Attention! Obstacle." This applies to a railroad crossing, a river, a stream, a trench or in fact to any serious obstacle that is permanently on the road.

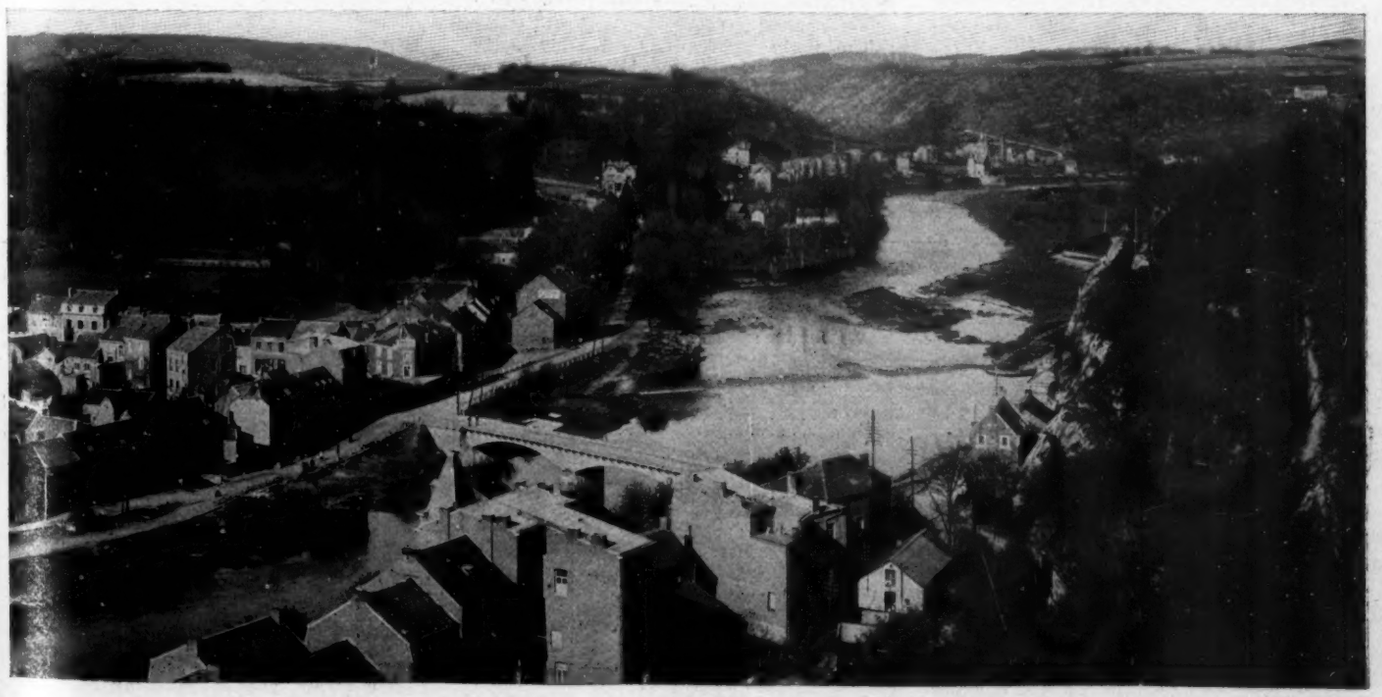
The road department deals with road matters. It refers to the proper government authorities whatever information it gathers and which it thinks may lead to having a road repaired or obstructions removed. It suggests where new roads should be made and offers its aid wherever possible.

The itinerary department is a useful one. Its work consists of gathering all possible information concerning the condition of the roads and publishing guide books. At present there are on file more than 150 guide books, which may be used by cyclists and motorists, and they show more than 400 different roads. These books are on sale at 10 centimes or 2 cents, to the members, and the whole collection is on sale for $1.50. During the last few years special attention was given the motor roads and there are now on file, prepared by the department, about forty guide books covering the principal routes in Belgium and many to important centers in foreign countries.

The map department has prepared eleven maps of the country from the time the club has been established. The latest map was completed and put on sale in 1907. It costs 18 cents on plain paper or 34 cents when mounted on linen.

Various contests are sometimes promoted by the editorial department in order to obtain information of special interest. One of these contests was to secure interesting photographs of sites, scenery and roads in Liege, one of the eight provinces—states—of this country. The result of this contest was that a score had these photographic works accepted and some time ago the most interesting ones were published in the Bulletin Official.

The annual of the club is a voluminous book of information concerning customs regulations, local laws and regulations, lists of recommended hotels, local tax statutes, lists of the road maps and guide books published by the club railroad tariff in foreign countries and Belgium, and a great deal of other useful information for the tourists. The motor car department is managed by Hector Colard and it issues every year a special annual for the benefit of motorists. The book, which contains more than 200 pages, is the most complete motoring work published in Belgium. It contains information on the Belgian customs, taxes and speed regulations for all other countries of Europe. There also is in the annual the "code de la route" or road regulations which were prepared by M. J. Perrigot, of France, and which have been adopted by the Automobile Club de Belgique, the Automobile Club de France, the Touring Club de Belgique and various other leading associations. Much other information of use to the tourist who travels in any European country will be found in the book. The annual is revised every year by Mr. Colard, who is vice president of the touring club. The publication department also issues every year a book of excursions and journeys by rail, cycle, motor car, boat and other means of touring. This year this interesting book is specially well illustrated.



PANORAMIC VIEW OF TOWN OF ESNEUX, TAKEN FROM BLUFFS OVERLOOKING VALLEY

THREE DAYS OF MOTOR SPORT AT ST. LOUIS

ST. LOUIS, MO., Nov. 9—The 3-day motor car meet, which was held under the auspices of the St. Louis Automobile Dealers' Association in this city, was opened last Friday by the best and most exciting hill-climbing contest ever held in the state of Missouri. Solomon hill, in St. Louis county, which had been selected for the test, is 6-10 mile from the base to the top of the incline and is considered the most difficult to negotiate within a radius of 100 miles of St. Louis. From the first half it is almost as straight as a die; then comes a turn at almost right angles and 200 yards further there is another turn, which is more gradual. The road is of macadam, and Friday there were many loose stones of small size on its surface, which made skidding posible.

More than 1,000 motor cars were packed in and around the scene and thousands of people, mostly from St. Louis, who had gone into the country to see the climb, were lined along the route, the majority of them assembling near what they facetiously called the "hairpin bend," thinking an accident would be likely at such a place. They were not disappointed, for it was on this part of the course that the most exciting event of the day occurred, when only by a fine display of nerve Phil Wells, driving a Moon car, escaped death. Wells came up the straight part of the road at terrific sped, but he miscalculated the turn and ran to the outside and over the crown of the roadbed. Some loose stone caused him to skid and he stopped facing the way he had come, with his car up against a fence which separated him from a drop down a hill.

Time Honors to Stanley

Time honors went to the Stanley steamer, which simply ran away from the rest of the cars, covering the course in the free-for-all in :40⅘. Both second and third place went to Stanley machines, and another car of this make tied for fourth place with the Apperson. Oldfield and Tuttle both drove in this event with a bunch of the best drivers around St. Louis. Oldfield had some hard luck, as the first time he drove his Stearns up the hill the timers failed to get his figure, owing to the failure of the timing device. The second time, the time was caught over the telephone which was used in connection with the other device. Oldfield probably lost a couple of seconds owing to this, but not enough to have overcome the advantage the Stanley car had. His time was :49⅗. McLain, driving the Apperson, which was tied with a Stanley for fourth place, made the best showing in this event of any gasoline car, his time being :46⅗. Then came Tuttle, who drove a Stoddard-Dayton, negotiating the distance in :49 flat; Oldfield was next, in :49⅗, with the Pierce-Arrow and another Stanley steamer following, their time being :49⅘ and :55.

In class E, which was for cars having a piston area over 90 inches McLain, driving an Apperson, was the successful contestant, his time being :45 flat, which beat his time in the free-for-all by :1⅗. Oldfield and Soules, both driving Stearns, tied for second place, each having negotiated the distance in :46⅗. In class D the Stoddard-Dayton, driven by Tuttle, received first honors, having covered the course in :49 flat. Tuttle made a fine climb and simply ran away from his competitors in his class.

Class C, while not furnishing the best time, furnished the most exciting event of the day, for it was in this class that Wells had his narrow escape. McLain, driving an Apperson, also took first honors again, his time being 1:00⅗, while a Moon driven by Igou took second place, having made the distance in 1:03. An Autocar, which had been entered by the Park Automobile Co., was not given any time.

Class E, for cars with piston area over 90 inches:

Apperson	McLain	:45
Stearns	Oldfield	:46 2-5
Stearns	Soules	:46 2-5
Pierce Arrow	Caldwell	:50

Free-for-all:

Stanley Special	Baldwin	:40 4-5
Stanley	Baldwin	:43 1-5
Stanley	Woodward	:45
Stanley	Cull	:46 2-5
Apperson	McLain	:46 2-5
Stoddard-Dayton	Tuttle	:49
Stearns	Oldfield	:49 2-5
Pierce-Arrow	Caldwell	:49 4-5
Stanley	Woodward	:55

Track Racing On Saturday

More than 5,000 persons assembled at the old Fair Grounds Saturday afternoon to see the second day's events of the 3-day motor meet being held under the auspices of the St. Louis Automobile Manufacturers' and Dealers' Association. Baldwin proved the star of the day. In spite of the turns being banked only for horse racing, he tore around them at a gait that made some of the veterans of the racing game sit up and look interested.

HAIRPIN TURN ON SOLOMON HILL, ST. LOUIS

The little Buick driven by McQuellan finished first in the class B event, having negotiated the distance in 1:04⅘, beating a Chalmers-Detroit driven by Paine, whose time was 1:05⅖, and a Jackson entered by the Deere Plow Co., its time being 1:21⅗. In class A the Victor made the best time, 1:53, followed by the Success, its time being 2:11, the Eureka next, 2:12, and the Simplo last, its time being 2:54. Summaries:

Class A, for motor buggies with wheels 36 inches or over:

Car	Driver	Time
Victor	Oliver	1:53
Success	Siddway	2:11
Eureka	Allen	2:12
Simplo	Cook	2:54

Class B, for cars with piston area under 50 inches:

Buick	McQuellen	1:04 4-5
Chalmers-Detroit	Paine	1:05 2-5
Jackson	Delaney	1:21 3-5

Class C, for cars with piston area over 50 and under 65 inches:

Apperson	McLain	1:00 2-5
Moon	Igoe	1:03
Moon	Wells	Did not finish

Class D, for cars with piston area over 65 and under 90 inches:

Stoddard-Dayton	Tuttle	:49
Packard	Lewis	:54 4-5
Stevens-Duryea	Blumcoe	:55 1-5

McLAIN, APPERSON

His time for the exhibition mile was :54⅘, which clips ⅕ second off of the state and city record for a mile on a circular track.

One of the prettiest races of the card was the 3-mile handicap, in which the Pierce-Arrow, with a handicap of 25 seconds, defeated the Stanley steamer driven

by Baldwin in 2:58, the other cars competing being handicapped as follows: Jack Blumcoe, 30-horsepower Packard, 25 seconds; Jack Taylor, 45-horsepower Stoddard-Dayton, 20 seconds; Soules, Stearns, 15 seconds. Baldwin in his Stanley steamer was scratch.

The special races for Ford and Moon cars proved interesting. There were four in the Moon race which came third on the program. Wells took the lead almost immediately. As he shot out of the dust clouds on the far turn, the flying dirt became a volcano and the next minute Taggart's yellow roadster had crashed through the outer fence. Igou, the driver, had taken the turn too fast and had skidded into the fence, which luckily was low enough so only the front tires struck it and the sturdy brakes held the car and driver from any injury. The time for Wells for the 2 miles was 2:31⅘. A special 2-mile event between a Buick four-cylinder runabout and a Chalmers-Detroit, the first driven by McQuellen and the other by Paine, was a well-contested match

WELLS IN MOON AT START OF HIS DANGEROUS SKID

TUTTLE, STODDARD-DAYTON

in which the Buick car carried off the laurels in 3:01⅘.

Novelty Race Laughable

A touch of humor that might have added much pathos to the afternoon's sport was provided by the novelty race in which the conditions provided that each operator should drive his car the first mile alone. At the end of this he picked up three passengers; at the end of the second mile he discharged them; at the end of the third he picked them all up again and at the end of the fourth he got rid of them and finished the fifth mile alone. Inasmuch as none of the drivers was willthey were compelled to hurl themselves from the swiftly-running cars. The result was that as each competitor passed the tape the track was strewn with rolling and bumping men, some of whom did not see the fun at all, but the big crowd laughed and applauded. The drivers were so zealous of their speed that they failed to comply with the conditions. The Moon, which was half a lap ahead on the third round, failed to slow down at all and went around passengerless. The Chalmers-Detroit got under way with only two men aboard instead of three. These two cars were disqualified and the race went to the other entrant, F. J. Maynard, in a car of his own make. His time was 8:37⅗.

Christie, Oldfield and Ollie Savin all tried to better the steamer's time, but failed. Christie went around in Oldfield's former record time of 59 seconds. Oldfield did the same, and Ollie Savin, driving Christie's Dreadnought, made it in 1:07. Jack Taylor drove the 45-horsepower Stoddard-Dayton in 1:08, while Charles Soules did the distance in 1:01⅗ in the Stearns.

There were match races between Christie and Soules, Oldfield and Savin and Oldfield and Christie. Christie defeated Soules 2 miles in 2:08 flat. Oldfield had no trouble in winning from Savin in their heat, negotiating the distance in 2:21⅕. Then Christie and Oldfield hooked up in the final and it proved a fast race, Christie catching Oldfield in the last 50 yards and winning by the narrowest margin in 1:04⅕.

Saturday's Race Summaries

Five-mile motor cycle race—Anderson won, Hazard second, Cornwell third; time, 6:53 3-5.

Special 2 miles for Ford cars—H. Apgar won, Britton second; time, 3:27.

Two-mile special for Moon cars—Wells won, Grinham second, S. Igou third; time, 2:31 4-5.

Two-mile match—McQuellen, Buick, won; Paine, Chalmers, second; time, 3:01 1-5.

Novelty race—Maynard, driven by Maynard, won; time, 8:37 3-5.

One-mile exhibition by Jack Stoddard in a Stoddard-Dayton—Time, 1:08 2-5.

Exhibition miles—Soules, Stearns, 1:01 3-5; Baldwin, Stanley steamer, :54 4-5; Christie, Christie, :59; Barney Oldfield, Stearns, :59 2-5; Savin, Christie's Dreadnought, 1:07.

Two miles, first semi-final sweepstakes—Christie won, Soules second; time, 2:08.

Two miles, second semi-final of sweepstakes—Oldfield, Stearns, won; Savin, Dreadnought, second; time, 2:21 1-5.

Free-for-all, 3-mile handicap—Pierce-Arrow, Paul Caldwell, driver, 25 seconds, won; Stanley steamer, L. Baldwin, scratch, second; Stoddard-Dayton, 20 seconds, third; time, 2:58 4-5.

Big Crowd Out Sunday

The motor car races Sunday at the fair grounds brought to a successful close the first national circuit meet, with a record-breaking attendance. The weather was fine and thousands of motorists were out to see the races. Baldwin in his Stanley steamer again monopolized the honors, driving 1 mile in :54⅘, equaling his record made Saturday. He also captured the 3-mile handicap race from scratch and ran over everything in the race. The time for 3 miles was 3:04. The Stoddard-Dayton, with a handicap of 20 seconds, finished second in this race, and the Moon car, driven by Taylor, with a handicap of 30 seconds, finished a creditable third. The speediest mile traveled by a gasoline car was :57⅘ registered by Walter Christie. Barney Oldfield also took a crack at the mile mark and did :58 flat. Charlie Soules drove a mile in 1:08 flat.

The 5-mile novelty race which furnished the comedy of Saturday's show nearly produced a tragedy Sunday. Four cars started in the race. The conditions were exactly the same as those in the novelty race of Saturday. After Fred. Grinham, one of the contestants, had gone around twice, and was preparing to slow up on the third lap to let the passengers out, Bob Holden, a chauffeur, one of the passengers, did not wait until the car had slowed up enough, but jumped off while the car was going about 25 or 30 miles an hour. He struck the ground headforemost, and was picked up unconscious.

The Pierce-Arrow car, driven by Paul Caldwell, went through the fence on the far turn in the 3-mile handicap race. Luckily the driver escaped with a few scratches. The car was not damaged to any extent.

The racing between Christie, Oldfield and Savins proved quite interesting. Christie took Soules' measure in the first heat. Then Oldfield and Ollie Savin met the former winner. The final was won by Oldfield in the Stearns.

Sunday's Race Results

Five-mile motor cycle race—Tim Bahnson, won; time, 5:45 4-5.

Two-mile race—Stoddard-Dayton, driven by Taylor, won; Moon, driven by Philip Wells, second; Chalmers-Detroit, third; time, 2:21 3-5.

Five-mile novelty race—Pierce-Arrow, driven by Paul Caldwell, won; Moon, driven by Philip Wells, second; Maynard, driven by F. J. Maynard, also started; time, 7:12 1-5.

Mile trials—Soules, Stearns; time, 1:02; Christie, :58; Oldfield, :58; Baldwin, :54 4-5.

Special match—Christie defeated Soules 1 mile; time, 1:00 2-5. Oldfield defeated Ollie Savin 2 miles; time, 2:23. Final—Oldfield defeated Christie; time, 2:04.

Three-mile handicap — Stanley steamer, scratch, driven by Baldwin, won; Stoddard-Dayton, driven by Taylor, second; Moon, driven by Wells, third; time, 3:04.

FUEL TEST TO COLBURN

Colorado Car Wins Denver Club's Economy Run—Prize for Ford —Corbin Is Disqualified

Denver, Colo., Nov. 10—While the computations of the sealers in the Denver Motor Club's economy contest held here Saturday showed that the 30-horsepower Corbin driven by G. W. Swanborough had traveled a distance of 112 miles on 2½ gallons of gasoline, a protest, filed Sunday by the Colburn Automobile Co., charging that the Corbin's gasoline was doctored, was sustained. A chemical analysis divulged the fact that the gasoline had been etherized. As a result the driver was immediately posted in the Denver Motor Club as being disbarred from participating in any events under the control of the club, and the Colburn Automobile Co., because of getting a percentage of 4.89, using 3¾ gallons and 4¼ ounces, or 23 pounds, carries off the $250 silver cup awarded for the victory and donated by Ralph W. Smith, president of the club. Furthermore, the first finding of the sealers was that the Corbin had also secured the second prize because of the smallest amount of gasoline used on the trip. Because of the finding of the protest committee it loses this prize, a $100 cup donated by the club, and this goes to the Ford runabout, which used 16½ pounds of gasoline, or 2 gallons 2 quarts 1 pint 9⅜ ounces of fuel.

The prizes were distributed as follows: First, to the car making the run between Denver and Greely and return with the highest percentage to its credit, which percentage was determined by taking the weight of the car with passengers and dividing that figure by the weight of gasoline consumed as expressed in half ounces. Second prize, to the car making the drive with the least consumption of gasoline regardless of weight or percentage.

The original finding was that the Corbin had won both the prizes by covering the distance between Denver and Greeley and return, 112 miles, with a consumption of about 2⅓ gallons of gasoline, which averaged better than 39 miles to the gallon.

The start was made from the club's headquarters, the Hotel Savoy, at 8 a. m. All cars followed a course laid out by the pilot car, a Colburn 30-horsepower runabout driven by Harold Brinker, who was accompanied by Robert W. Spangler, secretary of the club, acting as checker-in at both ends of the line. This car preceded the contestants by 30 minutes and scattered confetti at the turns. The official car, a Stoddard-Dayton driven by W. W. Barnett, containing President Smith acting as referee and John E. Frey, the starter, accompanied the string of participants, who left the city at 3-minute intervals. No car was allowed to pass the pilot, and while no restrictions were placed on running speed otherwise, all cars were to reach Greeley by noon, the first on the return trip to leave there at 1 o'clock and the last to arrive in Denver 4 hours after leaving.

Up to Friday night there were twenty-one entries, but when it came to filling and sealing this morning it was shown that three had forfeited their entrance fee. It was an ideal Colorado November day—balmy and bracing, the sun shining brightly and not a cloud to speck the turquois sky. Several scores of motorists joined the contestants on the trip and the thriving agricultural town, the head center of the "spud" producing district of the west, never saw such a crowd of motoring enthusiasts. It was a jolly, hungry crowd of about 250 that sat down to a real country dinner at the Hotel Camfield. In the main the roads were in good condition, the worst part being in the sections where the sugar beet haulers had plowed ruts and hollows with their heavy loads drawn to the beet sugar factories. These were negotiated without mishap to any cars.

The exhibition of the work of the Rapid delivery car, carrying more than a ton and a half of freight and covering the distance within the prescribed time was one that promises to make the commercial interests of this vicinity sit up and take notice. The gasoline used in the contest weighed 97 ounces to the gallon.

The contest was in charge of the following in addition to those already mentioned: Weighmasters, C. P. Allen and A. D. Mosher; sealers and adjusters, Dr. E. F. Dean and Dr. Ralph B. Taylor.

FINAL STANDING IN DENVER MOTOR CLUB'S ECONOMY RUN

No.	Car	H. P.	Driver	Passengers carried	Total weight	Gasoline G.	Q.	P.	Oz.	Percentage
10	Colburn	30	Fawcett	5	3,600	3	3	0	4¼	4.89
3	Pope-Hartford	30	Grady	5	3,800	3	3	1	8⅛	4.817
1	Stevens-Duryea	24	Maxwell	5	3,850	4	0	0	12	4.812
8	Stoddard-Dayton	45	Loveland	7	4,600	5	2	1	6⅝	4.16
5	Chalmers-Detroit	30	McDuffee	5	3,360	4	0	1	3⅞	4.158
6	Franklin D	28	Talbot	5	3,325	4	0	0	12	4.156
14	Aerocar	20	Young	4	3,150	4	0	0	12	3.93
20	Oldsmobile	40	McDonald	3	3,160	4	1	1	7⅝	3.65
21	Thomas six		Ball	7	3,670	5	1	1	6⅝	3.47
4	Cadillac	30	Hall	5	3,445	5	0	0	11	3.47
9	Cadillac	10	England	2	1,870	2	3	0	9¼	3.38
12	Ford	15	Alkire	3	1,725	2	2	1	9⅜	3.267
2	Fuller	40	Thorny	5	3,500	5	2	0	2½	3.265
15	Rapid	30	Larsen	2	5,725	9	0	1	2⅞	3.22
7	Buick	20	Norton	3	2,090	3	2	0	4½	3.03
19	Dorris	30	Havens	4	3,275	5	2	0	10½	3.00
11	Colburn roadster	30	Colburn	3	3,235	5	2	0	10½	2.97
18	Corbin	30	Swanborough	4	3,220	2	1	1	5⅝	*

*Disqualified

GOSSIP OF BIG RACE

Foreigners Hasten to Savannah To Train—Buick and Third Renault in Grand Prix

New York, Nov. 10—Of the fourteen foreign drivers engaged to pilot European cars in the grand prize race at Savannah on Thanksgiving day eleven have arrived. The Kaiserin Augusta Victoria, which got in on Saturday, had aboard Victor Hemery, Rene Hanriot and Fritz Erle, the Benz trio; and La Touraine on Sunday brought Francois Szisz, of the Renault team. Before the week closes this quartet will have joined the European contingent already at Savannah, which is made up of Wagner and Nazarro, Fiat; Cagno and Piacenza, Itala; Hautvast and Rigal, Clement-Bayard, and Duray, Lorraine-Dietrich.

Rival importers have different stories to tell of the posisbilities of the coming of a pair of Mercedes candidates, scheduled to be driven by Poege and Salzer. Walter C. Allen first stated he had received a cable that it had been decided not to send over the two Mercedes. Robert Fulton claimed to have had a counter cable that the cars would surely come. Then Mr. Allen announced the receipt of a second cable from Charles Raoul Duval, stating that owing to the death of the father of M. Desjoyeaux, a director of the company, who had planned to take charge of the team, that the Mercedes cars would not be shipped, but added that he was making every effort to secure them with the idea of having them manned by American pilots.

There was some possibility early in the week, according to an A. C. A. press announcement, of there being two additional entries—one a Buick, reported to be the 50-horsepower machine driven by Burman in the Lowell race, and the other a third Renault, a duplicate of this year's grand prix models, which had been shipped with the other two Renaults. It was said that Paul LaCroix would make the entry, provided that Renault would furnish a driver. George Robertson in a cable to Mr. La Croix made application for the mount. The Vanderbilt cup winner also had a chance of a seat at the wheel of a Panhard now in this country, provided a sale of it was made to a prospective purchaser with grand prix aspirations. The Buick entry was definitely announced on Tuesday.

Leonard Zengle will supplant Cyrus Patschke as pilot of the Acme, the latter being deemed by the company's officials at present a bit too young for such responsibility.

W. DuCros, of the Dunlop Tire Co., of London, has come over to look after the interests of his company in the race, the two Clement-Bayards and the Lorraine-Dietrich already having contracted for Dunlop equipment. The Continental Caoutchouc Co. has added to its grand

prize offer of $4,000, split into $2,000 for first, $1,250 for second and $750 for third, another offer of $500 for Continental equipment in the light car race—$250 for first, $150 for second and $100 for third.

A tardy and perhaps a bit doubtful foreign invader early in the week was Henry Fournier, who has been named to pilot the third Itala. Szisz, on his arrival, said that Fournier was scheduled to sail last Saturday.

H. Michener, who is to drive the Lozier entry, sailed for Savannah on Tuesday on the Kansas City. He will use a Briarcliff model for studying the course until Tom Lynch, his mechanic, who will sail on the 17th on the City of Atlanta, arrives on the 20th with the racing car itself. George Robertson, who will drive a Gregoire in the light car race, is to leave on the 16th.

The three Oldsmobiles entered for the light car race have been withdrawn, F. L. Smith, vice-president of the Olds Motor Works, stating that it was found that they could not be prepared in time. A third Chalmers-Detroit has been nominated by W. T. Bryson, the Savannah agent. It will be driven by Burns. The Gregoire and the S. P. O., two of the European entries, are on Savoire, due here next Saturday. The latter has 95.4 millimeter bore and 130 millimeter stroke. Juhaz, an Hungarian-American, will be its pilot. The Lancia light car racer is also on the Savoire. There arrived yesterday, however, a standard Lancia runabout, which will also be shipped to Savannah. W. M. Hilliard and his crew left for the course on Tuesday, taking with them the Lancia.

The latest addition to the prize list comes from the Bosch Magneto Co., which offers $500 to first, $250 to second and $100 to third, provided that the cars in question be equipped with Bosch magnetos.

AURORA HOLDS A RELIABILITY

Aurora, Ill., Nov. 6—Twenty-one owners took part in a fall reliability run which was held yesterday over the Aurora-Elgin-Hinckley-Sandwich century course and which was promoted by the Aurora Automobile Club. The field was divided into sides and the Evens won, only having 28 points charged against it as against 388 for the Odds. Those with perfect scores were: A. S. McWethy, Stoddard-Dayton, confetti car; Joseph Resing, Jackson; Eugene Miller, Locomobile; Alshuler Brothers, Halladay; Charles Phillips, Rambler; E. M. Currier, Halladay; C. S. Kilbourne, Packard; Walter Egerman, Rambler; Roy McWethy, Rambler; Frank Burton, Stevens-Duryea; Fred Labram, Mitchell; R. H. Colby, White; James McCredie, Stoddard-Dayton. Those penalized were: Emma Brunemeyer, Buick, 5 points; R. H. Langley, Buick, 166; C. C. Hinckley, Oakland, 13; Deering Stewart, Oldsmobile, 19; Frank Anderson, Rambler, 2; C. C. Hinckley, Oakland, 5. Most of the penalizations were for tire trouble.

EXCEL IN ROAD CARE

American Delegate to the Paris Congress Tells Why the European Highways are Better

Boston, Mass., Nov. 9—Chairman Harold Parker, of the Massachusetts highway commission, and Secretary Austin B. Fletcher have just returned to Boston after a trip abroad to attend the international congress of road builders at Paris. Mr. Parker represented not only Massachusetts but the United States as well. Before going to Paris Mr. Parker and Mr. Fletcher examined the highways of Ireland, Scotland and England. They afterward visited Nice and went over the French military roads up through the Alps. On his return, in talking about highways, Mr. Parker said:

"The state highways of Massachusetts are as good as any of the European roads, in my opinion. The American highways, that is the main highways and not the country roads, are built more thoroughly and of better material than the English or French roads.

"Where the Europeans excel us, however, is in the care of their highways. Why, they spend three times as much on their roads as we do. Time and money are expended generously in maintenance and in this they are superior to us. It is a good object lesson for us, too, as it shows that the expenditure is bound to bring results. They excel us in the fixing of locations and in uniform methods of construction. After we have constructed splendid roads they sometimes go into the hands of local authorities who neglect them and this causes a big waste of time and money later on for repairs. The centralized government system in European countries prevents this.

"Limestone is used very much in constructing European roads, particularly in England, but such a road would not last a year in this country. There is not such traffic as we have. When harder material is needed it costs so much to transport it that it makes the road-building expensive.

"Tar mixtures, according to the congress, seemed the most popular method for preserving the roads. In England there is a machine that spreads the tar uniformly and by means of compression. This is the difficulty we have found here in using tar, but this machine did it wonderfully well. The consensus of opinion seems to be that 10 or 12 miles an hour does no damage to a road, while a speed any higher tears away the binding."

JACKSON IN HARD RUN

Boston, Mass., Nov. 7—Statistics of the sealed bonnet non-motor stop run of the model H Jackson from Jackson, Mich., to Bangor, Me., which was finished last Monday and in which E. P. Blake and C. G. Percival were the principals, show that the trip occupied 7 days 11 hours and that the motor was running 215 hours. It took 100 gallons of gasoline, 6 gallons of lubricating oil, 16 gallons of water and 1 pound of calcium carbine for the gas lamps to make the journey. The only mishap occurred at Rochester, N. Y., where a motorman butted the car off the track and broke the Jackson's rear axle. This was replaced in 6 hours with the engine going all the time. The car was equipped with Goodyear tires and there was not a puncture from start to finish. Weather conditions were not any too good, the party encountering nothing but rain and snow from Jackson to Albany. From Albany on the highways improved.

VICTORY FOR GOOD ROADS

Milwaukee, Wis., Nov. 9—The so-called good roads amendment to the state constitution of Wisconsin was overwhelmingly adopted at the general election on November 3, and the state is now required to give aid to highway improvement and construction work. The state geological survey already has started work on laying out an elaborate system of state highways, which when completed will form a chain of drives and courses throughout the state. The first work under the new amendment is the 5-mile boulevard from the city limits of Milwaukee, an extension of Grand avenue, to the county limits, which eventually will form a boulevard half way across the state on nearly an air line to the capital, Madison. The distance is 85 miles.

DENVER MOTOR CLUB'S ECONOMY RUN—CONTROL AT GRINNELL

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Improving the Motor Car Nomenclature

ONE name for a particular part of a motor car, no matter what make of car it is used in and only one name, would result in much simplification to many owners of cars as well as to those who contemplate to be classed in the ranks of owners in the near future. One maker uses the term differential gear and another the expression balance gear, and the net result is confusion in the mind of the uncertain; one maker building a car with side chain drive refers to the countershaft whereas another manufacturing a car with the same type of drive makes use of the term jackshaft; one maker claims a double ignition set, but uses only one set of spark plugs and another maker also claiming a double ignition outfit uses two sets of spark plugs; at one factory the high-tension magneto requires a single-unit coil, which is carried on the dash or under the seat, and at a nearby factory the high-tension magneto fitted does not require a coil at all; one catalogue tells of the half-time shafts of the motor and another speaks of the camshaft; in a transmission set one engineer refers to the countershaft, another to the layshaft and a third to the secondary shaft; and in connection with transmission sets one maker speaks of the sliding set used, another of the progressive set used and the third particularizes sufficiently by designating it a sliding progressive set or a sliding selective set. These and many other examples sufficiently outline the field in which several expressions or names can be used for the same part, both names perhaps being equally correct in places but not correct in others.

A High-Tension Magneto

ANALYZING a few of these some of the discrepancies appear: A high-tension magneto should be one that generates within itself a high-tension current that is a current of sufficient voltage to bridge the spark plugs points within the cylinders in the form of a spark. From this it is evident that if only a low-tension current is generated within the magneto armature, which has to be raised to a high-tension current in a coil carried outside of the magneto, then the apparatus is not a high-tension one but a low-tension one. It would appear that strictly speaking the only high-tension magneto is one with a primary and a secondary winding on the armature, and other magnetos with but a primary winding on the armature are low-tension instruments. One exception to this would be the magneto with a primary armature winding, but with a secondary coil incorporated in the magneto's make-up so that the complete instrument gave out the high-tension current.

The Double Ignition System

A MOTOR car with a magneto and a battery as the two sources of current supply, with a distributor on the magneto to deliver its current to a set of spark plugs, and the battery current passing through a coil and commutator to separate set of plugs has, in every sense of the word, a double ignition outfit. On the other hand if this car has its magneto and battery with the battery current sent through the magneto coil and distributor to the magneto plugs, that car has not a double set of ignition. The coil, plugs and distributor used in one set are used in the other, and it would be as inconsistent to therefore call the battery and magneto arrangement two sets as to speak of a car having two gasoline systems because it carries two gasoline tanks. There are few double sets of ignition but very many combination sets with two current producers, and one set of plugs; or two current producers and one coil, one distributor and one set of plugs. Careful differentiation in this matter is needed. Information is frequently given out regarding ignition systems which is misleading.

NOT only is there demand for proper nomenclature in motor cars but also necessity of greater care in the use of the proper names. A few examples will suffice to explain this: The word pedal is derived from the Latin root *pedalis* and the French *pes*, both of which mean foot or pertaining to the foot, yet how many makers will persist in using the expression "foot pedal" when pedal means foot. The word foot is entirely unnecessary. *Two* halves is an equally common error seen in catalogues and in various styles of literature sent out. When it is said "The two halves of the crankcase are bolted together" the *two* is not necessary, in fact, indicates an imperfect knowledge of the language. In speaking of an *expanding* brake it is rarely necessary to say that it is an *internal expanding* type, because not a single maker is at present manufacturing a brake of the expanding type which is not carried within a brake drum or wheel and which consequently is an *internal type*. The expression external clamping is equally open to criticism, as all *external* brakes in use are of the clamping variety. Many makers refer to a multiple-ring clutch when they should say multiple-disk, although there are cases in which the radial dimension of the disks is so small as to warrant the term ring instead.

Correct Nomenclature Important

CORRECT nomenclature may be considered entirely unnecessary by many makers, improper use of words and incorrect spelling may also be sidetracked as non-essentials, because they do not add to the cost price of the car. This is true, but they often help in selling the car after it is made. The buying clientele of motor cars is in many cases a highly educated populus, composed of people well schooled in the language art; and it is certain that properly worded and correctly spelled literature will appeal to them more than that class which bristles with ungrammatical sentences and incorrectly spelled words. In the building of a car the utmost care is taken in the heat treatment of the steels, the best make of pyrometer not being too good; in working these steels the most accurate chemical analysis is essential; in making the many steel parts micrometer measurements are essential; in painting and trimming the bodies the science of coloring is studied; and in fact in all parts of the car the greatest care is bestowed, then why should this same carefulness not be carried into the publicity end. It is exceedingly repulsive when reading the catalogue of a high-grade car to encounter many of the expressions referred to above.

A Possible Solution

AS to be the best solution of whether to call the shaft that carries the forward sprockets in a car with side chain drive a *jackshaft* or a *countershaft* could be left to a commission on motor car nomenclature, which commission should be composed of the best engineers in the country, assisted by one or two university professors versed in the science of the language; such a committee to be appointed by the American Automobile Association or any other national organization. If the proper spelling of words is of sufficient import to call for the attention of the president of the country, as well as call for parliamentary action in other lands, there is no reason why the proper nomenclature, or naming of parts, of motor cars should not be settled in the early days of the industry before had habits have been too long established. The correction or standardizing of motor car nomenclature can go hand in hand with the standardizing of the many car parts, which work has been receiving the attention of the A. L. A. M. since its inception. A standardizing of names would eliminate many misunderstandings.

NINETY-TWO CAR MAKERS IN CHICAGO

CHICAGO, Nov. 9—All of the spaces allotted in the motor car sections of the Chicago show, to be held February 6-13, have been accepted. The exhibitors, as will be seen on reference to the list, include practically every manufacturer of note and, in addition, several who have not previously exhibited. As usual the Chicago list contains the names of several makers who will exhibit at no other show. The number of exhibitors in the pleasure vehicle sections of the last Chicago show was ninety. In the 1909 show ninety-two already have secured space and there are several on the waiting list. There will be twelve motor car exhibits in the basement of the Coliseum annex, the names of which are not included in the accompanying lists. A list of the remaining departlated acceptances have been received by General Manager Miles.

Last year's attempt to organize a motor cycle department was only partially successful. Manufacturers delayed their applications to such an extent that it was necessary to allot the space intended for them to other applicants and several motor cycle exhibits were, in consequence, forced into the basement and armory gallery. This year the responses were numerous and prompt, so that practically all of the motor cycle exhibits will be found grouped on the second floor of the annex. In 1907 there were eleven exhibitors of motor cycles. In 1909 there will be twenty-one. Accessory manufacturers will occupy the galleries of the Coliseum and armory, the second floor of the Coliseum annex and a part of the basement. There have been a greater number of allotments than ever before. A complete list will be ready about a week hence, and when it is announced it is believed that Chicago will be able to boast of another record-breaking motor car show.

Everyone Accepts Space and Waiting List Is Established—Growth of Garden Exhibition

Growth of Garden Show

New York, Nov. 9—According to statistics compiled by M. L. Downs, secretary of the show committee of the Association of Licensed Automobile Manufacturers, the number of exhibitors at the show in Madison Square garden has increased 100 per cent since 1905. In the same period the amount of floor space utilized for this show in Madison Square garden has increased 40 per cent. T[illegible] space has been cumula[illegible] gained each year through [illegible] gineering. At the next show, January 23, there will be about 5,000 feet more space available than there were last year. This additional room has been gained this time chiefly by manipulating the plans of the elevated platform and what was last year the mezzanine floor. Last year there was a mezzanine gallery at the rear of and about 4 feet above the elevated platform that is built over the boxes. At the coming show there will be no change of level, but the boxes and other seats will be floored over evenly and there will be a 10-foot passageway between the vehicle exhibits at the front of the platform and the display of accessories at the back of it. The platform will overhang the main floor as before. The gain in the number of exhibitors represents not so much an increase in the ranks of the manufacturers of licensed cars as it does new exhibits of accessories. There will be more than 300 exhibitors in the garden this year, which will exceed all former records and which will give the A. L. A. M. a chance to show what it can do in furnishing a proper background.

LIST OF MANUFACTURERS OF MOTOR CARS AND MOTOR CYCLES WHO WILL EXHIBIT AT CHICAGO

COLISEUM, MAIN FLOOR

Maker	City
Winton Motor Carriage Co.	Cleveland
Pope Mfg. Co.	Hartford, Conn.
E. R. Thomas Motor Co.	Buffalo
Stevens-Duryea Co.	Chicopee Falls, Mass.
Peerless Motor Car Co.	Cleveland
Elmore Mfg. Co.	Clyde, O.
Woods Motor Vehicle Co.	Chicago
Thomas B. Jeffery & Co.	Kenosha, Wis.
Babcock Electric Carriage Co.	Buffalo
Baker Motor Vehicle Co.	Cleveland
F. B. Stearns Co.	Cleveland
Reo Motor Car Co.	Lansing, Mich.
Packard Motor Car Co.	Detroit
Everitt-Metzger-Flanders Co.	Detroit
Premier Motor Mfg. Co.	Indianapolis
Studebaker Automobile Co.	South Bend, Ind.
National Motor Vehicle Co.	Indianapolis
Haynes Automobile Co.	Kokomo, Ind.
White Co.	Cleveland
Dayton Motor Car Co.	Dayton, O.
Cadillac Motor Car Co.	Detroit
Maxwell-Briscoe Motor Co.	Tarrytown, N. Y.
Locomobile Co. of America	Bridgeport, Conn.
H. H. Franklin Mfg. Co.	Syracuse, N. Y.
Apperson Bros. Automobile Co.	Kokomo, Ind.
Buick Motor Co.	Flint, Mich.
Holsman Automobile Co.	Chicago
Pope Motor Car Co., Toledo	Hartford, Conn.
American Locomotive Co.	New York
George N. Pierce Co.	Buffalo
Olds Motor Works	Lansing, Mich.
Corbin Motor Vehicle Corp.	New Britain, Conn.
Matheson Motor Car Co.	Wilkesbarre, Pa.
Lozier Motor Co.	New York
Bartholomew Co.	Peoria, Ill.
Chalmers-Detroit Motor Co.	Detroit
DeLuxe Motor Car Co.	Detroit
Mitchell Motor Car Co.	Detroit
Ricketts Auto Works	South Bend

COLISEUM ANNEX, FIRST FLOOR

Simplex Motor Car Co.	Mishawaka, Ind.
York Motor Car Co.	York, Pa.
Austin Automobile Co.	Grand Rapids, Mich.
Oakland Motor Car Co.	Pontiac, Mich.
Pennsylvania Auto-Motor Co.	Bryn Mawr, Pa.
Midland Motor Co.	Moline, Ill.
Welch Motor Car Co.	Pontiac, Mich.

FIRST REGIMENT ARMORY

Kissel Motor Car Co.	Hartford, Conn.
Speedwell Motor Car Co.	Dayton, O.
Buckeye Mfg. Co.	Anderson, Ind.
Jackson Automobile Co.	Jackson, Mich.
Columbus Buggy Co.	Columbus, O.
Moon Motor Car Co.	St. Louis
Atlas Motor Car Co.	Springfield, Mass.
Dorris Motor Car Co.	St. Louis
Overland Auto Co.	Indianapolis
Cartercar Co.	Detroit
Pope Motor Car Co., Waverley	Indianapolis
W. H. Kiblinger Co.	Auburn, Ind.
Mora Motor Car Co.	Newark, N. Y.
Nordyke & Marmon Co.	Indianapolis
Moline Automobile Co.	E. Moline, Ill.
Auburn Automobile Co.	Auburn, Ind.
Anderson Carriage Mfg. Co.	Anderson, Ind.
Chicago Coach and Carriage Co.	Chicago
Rapid Motor Vehicle Co.	Pontiac, Mich.
Black Mfg. Co.	Chicago
Meteor Motor Car Co.	Bettendorf, Ia.
Streator Motor Car Co.	Streator, Ill.
Staver Carriage Co.	Chicago
Anderson Carriage Co.	Detroit
Model Automobile Co.	Peru, Ind.
J. V. Lindsley & Co.	Dowagiac, Mich.
Fort Pitt Motor Mfg. Co.	New Kensington, Pa.
Wayne Works	Richmond, Ind.
Gaeth Automobile Co.	Cleveland
Berliet Import Co.	Chicago
Rauch & Lang Carriage Co.	Cleveland
C. P. Kimball & Co.	Chicago

MOTOR CYCLE SECTION, ANNEX, SECOND FLOOR

Minneapolis Motor Cycle Co.	Minneapolis
The Pierce Cycle Co.	Buffalo
Merkel-Light Motor Co.	Pottstown, Pa.
Reading Standard Co.	Reading, Pa.
New Era Gas Engine Co.	Dayton, O.
Magnet Motor Co.	Chicago
Hendee Mfg. Co.	Springfield, Mass.
Harley-Davidson Motor Co.	Chicago
Excelsior Motor Mfg. Co.	Chicago
Wagner Motor Cycle Co.	St. Paul
Consolidated Mfg. Co.	Toledo
Ovington Motor Co.	New York
Aurora Automatic Machinery Co.	Aurora, Ill.
Thiem Mfg. Co.	Minneapolis
Auto-Bi Co.	Buffalo
American Motor Co.	Brockton, Mass.
N. S. U. Motor Co.	New York
The Hornecker Motor Mfg. Co.	Geneseo, Ill.
Armac Motor Co.	Chicago

[redacted]AST OF FEATURES OF THE PARIS SALON

—It will be a rather [redacted] salon than usual that [redacted]ieres will throw open to the [redacted] on the morning of November 28. After the ultra-voluptuous decennial, the organizers have decided on an economical exhibition, and though the show has no difficulty in holding its unique position as a fashionable spectacular display, the light of the eleventh annual will be dim in comparison with that of the tenth show. The decision to hold an economical show meant the abandonment of the temporary building on the Esplanade des Invalides and the splitting up of the salon into two distinct exhibitions, the first devoted to pleasure cars, the second to all commercial applications of the motor car.

Paris, with all its advantages, has no hall large enough for the housing of the most important trade exhibition of the country. It is true that the Galerie des Machines is empty, but the salon organizers are artists who would as soon think of draping the Champs-Elysees in black as housing their polished chassis in the monster steel and glass house on the Champ de Mars. Consequently pleasure cars will occupy their usual palatial hall November 28 to December 13, and 11 days later the doors of the same hall will be flung open to an exhibition of machine tools, gas engines, marine engines, stationary power plants, commercial vehicles—in fact every branch of the motor car excepting the pleasure vehicle.

No Lavish Decorations

Decorations will be modest—comparatively. This, however, will not prevent the organizers spending more than any other body holding a motor show; but the difference between 1908 and previous years is that individual exhibitors, instead of being encouraged to adorn their stands with fine metal work, crystal, and gold paint, will be asked to refrain, and unlike previous years, will receive no special mention or award if they spend several thousand dollars on triumphal arches for their booths.

The distinctive feature of the salon will be the attention paid by large firms to the production of small, low-powered, moderate-priced touring cars, runabouts and taximeter cabs. In previous years small firms and newcomers to the industry filled the small car class, the world-renowned firms being still too busy with rich customers to pay any attention to the man of moderate means. There are a large number of small concerns and a few big ones that have tackled the problem of presenting a satisfactory two-passenger runabout with a single or two-cylinder engine at a maximum of $1,000. Several of them get as low as $800 for a one-lunger carrying a couple of passengers, but with two exceptions these are small firms.

Light Cars Are Popular

The big houses are interested in the light touring car or runabout from $1,000 to $1,800 and, almost without exception, have gone into this branch of the business with a set of cars which although the most remarkable feature of the European industry are altogether unknown to America, duty keeping them out. Thus Renault has brought forth a two-cylinder 8-10-horsepower two-passenger runabout, put on the market complete, without accessories, for $1,000. Such a move on the part of the Billancourt firm is not surprising, for while building a car de luxe it never has neglected the small fry. The new model has an engine with two vertical cylinders in one casting measuring 75 by 120 millimeters bore and stroke, differing only in a few details from those in service all over the world on taxicabs. The only important change apart from dimensions is that in place of three-quarter elliptic springs at the rear semi-elliptics are used. The motor has the oil level regulator fitted for the first time on the large cars this year, and, of course, high-tension magneto. Anything short of a motor cycle without magneto is looked upon as a hybrid nowadays.

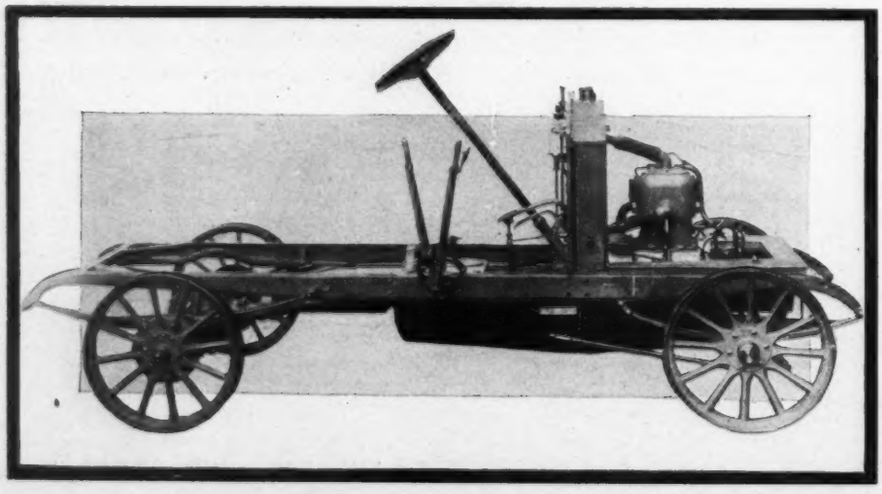
In addition to this little car and all their usual models with only detail modifications, the Renault brothers will produce a couple of specially light models of 20-30 and 35-45 horsepower respectively, intended for fast work with low tire consumption. Excepting a rather more compact power plant, a more inclined steering column, and a special gear box, the cars will be modelled after the usual series with all parts lightened. Comfortable closed bodies can be fitted, but they must be lighter than usual.

The aeronautical engine has undergone some changes since it was first brought out, but will now be presented in a definite form. Instead of a fan at each end of the sheet metal housing enclosing the motor, there is but one at the forward end, the current upon being drawn in being deflected towards the engine base, passing round all the exhaust pipes, the lubricator pipes, and finally on the exhaust box carried longitudinally under the engine base. The aerial propeller is mounted on the camshaft instead of the crankshaft, thus getting a slower speed without the necessity of special gearing.

Brasier, Dietrich, C. G. V., now Charron Limited; Panhard and Berliet, all firms that have been conspicuous in the development of the powerful and costly type of car, have each brought out a little two-cylinder model of not more than 12 horsepower, equipped with runabout, touring car or taxicab body. Brasier's two-cylinder practically is a simplified and reduced model of his large cars, the engine being a vertical one of 102 by 120 millimeters, valves on one side, with Brasier carbureter, and Bosch high-tension magneto. Water circulation is by thermo-syphon, with fan behind the radiator, and lubrication by gear-driven pump. A leather-faced cone clutch transmits the power from the engine to the gear box, and connection to the rear wheels is by propeller-shaft and live axle. Suspension, as in practically all these small models, is by three-quarter elliptics rear and semi-elliptics in front. In addition to this model there will be one on somewhat similar lines with a four-cylinder engine in one casting, the horsepower being about 15. A low-tension magneto on the Brasier, as on a very large number of important European makes, has had to give way to the high-tension type. As the high-tension installation is never accompanied by a reserve ignition, there must be distinctive advantages to account for this wholesale abandonment of the low-tension system.

Plans of De Dietrich

Dietrich, who has always used chain-drive and low-tension magneto, will next year have seven distinct models, on three of which the drive will be by propeller-



CHASSIS OF THE RENAULT TWO-CYLINDER VOITURETTE

shaft and the spark from a high-tension magneto. These models include the 3.1 by 4.7 two-cylinder runabout, a 15-horsepower four-cylinder, and a 20-horsepower with the same number of cylinders.

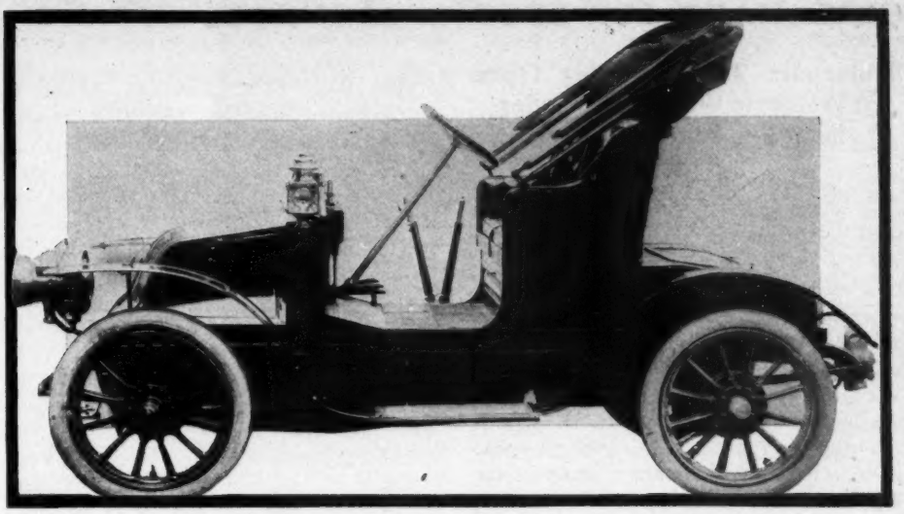
Charron has entered thoroughly into the small car business with two rather original models, one having a couple of cylinders, the other four, both in a single casting. In each case the bore and stroke is 3.1 by 4.7, and on both models the radiator is placed on the dashboard, behind the engine, with circulation by thermo-syphon. Accessibility, interchangability and simplicity have been very closely studied with remarkable results. The gear-shifting lever passes direct into the three-speed box; running gear and road wheel brakes are interchangeable, as are also the inlet and outlet water pipes. Suspension is by three-quarter ellipties at the rear, and, of course, the armored wood frame has been abandoned. It is rumored that on the large models there will be a new device giving direct drive on all four speeds; no official confirmation of this can be obtained, however.

Panhard has a two-cylinder model in hand, but is not inclined to talk about it at present. The novelty of the pioneer firm, however, will be the adoption of the Knight silent engine, invented by Charles Y. Knight, and built for several years by Knight & Kilbourne, of Chicago. Daimler, of England, has taken up the patents and will apply them to all 1909 models, while Minerva will do the same in Belgium. The Panhard firm refuses to divulge its intentions and even declares officially that it will have nothing new at the salon. But as the Knight engine has been under test for the last 6 months, it is more than probable that the patent will be applied to at least some of the 1909 models. Fiat is declared to have the same patents under consideration for Italy.

Two-Cylinder Berliet

Berliet, who up to quite recently had nothing smaller than a 25-horsepower machine will have a two-cylinder shaft-driven car of 8-9-horsepower, a four-cylinder 15-horsepower model with shaft drive, and a 22-horsepower with the same characteristics. Low-tension magneto is abandoned for the high-tension type, and a new system of force feed lubrication is adapted to all models with the exception of the 60-horsepower four-cylinder.

Itala also has changed over from low-tension to high-tension magneto on all models, including the four-cylinder 14-20-horsepower light chassis intended for a town vehicle or light touring car. The Isotta-Fraschini will be in the light car business with a small four-cylinder having the engine in one casting, and final drive by cardan shaft. Darracq has a series that varies from a one-lunger voiturette with two-passenger body, to a six-cylinder extra long chassis. The gear box on the rear axle, which is a feature of the taxicabs now in use in New York, is a thing of the past so far as Darracq is concerned. The new cabs will have their three-speed gear box mounted on the subframe, immediately behind the cone clutch and connected to it by a short shaft and universal joint. The clutch spring is within the forward end of the gear box, contained within a sleeve directly acted upon by the clutch pedal. Special provision has been provided against the leakage of grease out of the gear box. Lubrication has been improved by the adoption of a mechanically-driven Dubrulle lubricator, operated off the camshaft, in place of the pressure-fed lubricator at present employed. The changes of the cab chassis apply to the smaller touring cars, with the exception that there is no universal joint between the clutch and the gear box. Three-quarter elliptic springs will be used for the rear suspension of all models, and the change speed lever under the steering wheel will be abandoned on all but the voiturettes.



RENAULT TWO-CYLINDER VOITURETTE, FULLY EQUIPPED

The Mercedes follows the general line of motor evolution by producing a shaft-driven model for 1909, the engine of which will be a four-cylinder of 3.5 by 4.7 bore and stroke. Ignition is by Eiseman high-tension magneto, valves are on opposite sides, and cooling is by honeycomb radiator. Four speeds are provided by the selective type of gear box, with direct drive on the fourth. A couple of torque rods lead from the universal joint casing to points on the rear live axle near to the road wheels; the differential gear is in the same plane as the propellershaft, the drive being by double bevel gear.

Few Six-Cylinder Models

Six-cylinder models will be shown, but they will probably be fewer in numbers than at any previous exhibition. The six-cylinder engine never really caught on among continental motorists, and the fashion has turned towards lighter and low-powered machines.

In brief, the tendency of 1909 will be towards light four-cylinder touring cars, with bloc casting for the smaller models; high-tension ignition by magneto only for all but the largest cars; water circulation by thermo-syphon below 15-horsepower; gear-driven lubricators on all models; shaft-drive on all but the largest models; suspension by three-quarter ellipties on all models.

At the industrial show special attention will be paid to the development of the marine motor. A large official stand has been secured with the object of pointing out to constructors the possibilities of business in the application of internal combustion motors to fishing boats and the various types of pleasure craft. It is not likely, however, that very much of interest will be shown on the stands, for French constructors have up to the present paid little attention to the marine engine.

ROAD HONORS TO THE WHITE

Phoenix, Ariz., Nov. 10—According to the announcement of President Bullard, of the local club, the White steamer is the winner of the Los Angeles-Phoenix road race, with the Elmore second, Kisselkar third and Franklin fourth. This will not be official, though, until the club receives the mailed reports showing the time to be deducted at the Colorado river. In California the Franklin was several hours ahead, but the driver lost his way in the desert, slept 4 hours until daylight and never was able to catch up with the leaders after that. The White finished here at 6:33 last night, the Kisselkar at 7:41, the Elmore at 8:45 and the Franklin at 9:50. The distance of the race was 450 miles, and at least one-fourth of the way was over shifting sands and through practically desert country. The towns passed through were El Monte, Puenti, Pomono, Ontario, Uplands, Cucumonga, San Bernardino, Beaumont, Palm Springs, Indio, Mecca, Dos Palms, Chucka Walla Springs, Ehrenberg, Quartzette, Salome and Buckeye. The rules were few.

GLAD HAND FOR LOCO

Bridgeport Thrown Wide Open To Welcome Winner of Vanderbilt—Big Banquet Given

Bridgeport, Conn., Nov. 9—No Olympian chariot and charioteer ever was accorded a more royal welcome than Bridgeport gave the Locomobile and George Robertson, victors in the Vanderbilt cup race, on the occasion of their home-coming this week. The celebration was really a 2-day affair, starting with a triumphal run from New York to the Connecticut city on Sunday, continuing with an afternoon of jubilant reception on Tuesday, and winding up that evening with a great banquet, at which the keynote was "local pride" over the fact that the first American car to win an international road race was "built in Bridgeport."

Illustrative of Bridgeport's universal cooperation in doing honor to the victors, it is to be noted that the banquet was promoted jointly by the Automobile Club of Bridgeport, the Bridgeport board of trade, the Manufacturers' Association, the Business Men's Association and the Press Club of Bridgeport. In the great dining room of the New Stratfield hotel were gathered 300 of Bridgeport's representative men, and still there were some that could not find seats at the tables. No such assemblage had ever before been gathered at a banquet in the city's history.

On a pedestal in front of the long guests' table stood the historic Vanderbilt cup itself. The sight of it seemed a constant inspiration to enthusiasm. In fact, it was a hurrah dinner from start to finish. The corks had not been popping many minutes before the banqueters broke forth in song. With 300 voices and an orchestra to accompany, the singing was indeed electrifying.

State's Attorney Stiles Judson, who filled the post of toastmaster, was not only patriotically eloquent, but kept the fun going as well, always ready with clever repartee in response to the shots fired at him constantly from the tables. He had beautiful bouquets to hand out to Robertson, Riker and the Locomobile company. George E. Hill, speaking for Mayor Henry Lee in his absence, paid a glowing tribute to the mechanics that built the winning car. Amzi L. Barber declared that he had started the Locomobile company to give a job to his son-in-law, Davis, and that the presence of the Vanderbilt cup proved that he had made good. Mr. Barber quickly switched to a discussion of good roads, in the course of which he sketched their history and told of the accomplishments of Macadam and Telford. He advocated building a strip of asphalt in the center of all macadam roads, which he said would insure an imperishable and dustless highway. In conclusion, he declared himself in favor of the expense of roads building being divided equally among the government, the state, the county and the township, one-quarter each.

Then Judge E. K. Nicholson, on behalf of the board of trade, presented its engrossed resolutions of congratulations to the Locomobile company. S. T. Davis, Jr., in receiving them, said that the bringing of the cup to Bridgeport was primarily due to the sportsmanship and liberality of William K. Vanderbilt, Jr., and that his rules had made it possible to produce the speed machine that had evolved successful. Mr. Davis told how Dr. Thomas, of Chicago, had ordered the first racer and how that had led to the building of the two cars that had finally triumphed. He touched upon their failures and their successes on the path to the ultimate victory in the recent race. In conclusion, he said, "Racing is expensive, but it pays when you win."

Next came the eloquent presentation by Thomas H. Macdonald of a silver shield to the designer of the winning car. Mr. Riker was brief and modest in his reply, attributing the success of the car to the material, workmanship and superintendence supplied by the company.

Then came George Robertson's turn at recognition. It took the form of a silver cup. In presenting it, Horace E. Jackson told of the famous men that Bridgeport had given the world of invention. The inventors of the Maxim and Hotchkiss guns and the Howe sewing machine were Bridgeporters. Wilson Marshall, who won the kaiser's transatlantic yatching trophy, and Harry Porter, who is the Olympic champion at jumping, also hail from the Connecticut town. Robertson modestly thanked the donors and expressed the wish that next year the Locomobile company would build three racers and send them over to France for the grand prix.

The banquet had followed a most enthusiastic greeting in the afternoon by the city at large to Robertson and the Locomobile. Many factories were closed for the afternoon and all the public school children were let out to join in the welcome. At the ringing of the fire bell, sharp at 3 o'clock, George Robertson and his mechanic, Glen Ethridge, left the Locomobile factory in the victorious car amid an ovation of hilarious cheering by the workmen in the Locomobile factory.

The run to Bridgeport on Sunday was a triumphal procession. Robertson started from the Locomobile headquarters in New York city, at Broadway and Seventy-sixth street, at 9:45 a. m., escorted by ten Locomobile touring cars bearing enthusiasts. Stops were made at New Rochelle and Port Chester, where car and driver were greeted by crowds afoot and in motor cars.

The formal presentation by the Vanderbilt Cup Commission of the cup to the Locomobile Co. of America is scheduled to take place Thursday night at 8:30 o'clock at the Automobile Club of America.

GIANT FUEL TEST HELD

Chalmers-Detroit Agents Participate in Novel Non-Motor Stop Run on Election Day

Detroit, Mich., Nov. 9—Final returns on the non-motor stop run conducted by the Chalmers-Detroit Co. on election day, November 3, show that the average performance of the Chalmers-Detroit 30 that day was quite up to the promises given in the first reports of the contest received by wire. More than 20,000 miles was actually covered by Chalmers-Detroit cars. The average performance of all the cars all over the country was 18.2 miles to 1 gallon of gasoline. The following table shows, relatively, only a very small number of the agencies which entered cars in the election day run, but at the same time it shows the average performance for different sections of the country:

Agency	Average miles per gallon gasoline
Schenectady, N. Y.	21.70
Philadelphia, Pa.	13.80
New York City	16.75
Salt Lake City, Utah	25.00
Minneapolis, Minn.	19.34
Wichita, Kan.	21.60
Chicago, Ill.	15.15
Macon, Ga.	13.50
Toledo, Ohio	20.00
Greenville, S. C.	23.52
San Antonio, Tex.	15.39
Waterloo, Iowa	17.70
St. Louis, Mo.	15.40
San Francisco, Cal.	18.00
Portland, Ore.	19.00
Detroit, Mich.	16.66
Buffalo, N. Y.	19.47
Brooklyn, N. Y.	19.30

The Chalmers-Detroit Co. offered a prize of $100 to the driver who would make 200 miles on the smallest amount of gasoline. The winner of this prize has not yet been decided. Honors seem to lie between the Tom Botterill Auto Co., of Salt Lake City, and A. Vernon Hart, of Rochester, N. Y. Botterill reports the use of 8 gallons of gasoline, and Hart the use of 8¼ gallons, but the Rochester driver did a few extra miles and only additional reports can settle the winner of the $100 prize. The largest amount of gasoline used by any of the contestants was Wilkes-Barre, Pa., 19 gallons over the hills of Pennsylvania. The greater portion of the runs made by each of the cars was made on country roads. A number of drivers did not even confine themselves to covering a regular route which had been laid out ahead of time. Several of them actually made runs of 200 miles across country. The Philadelphia car did its 200 miles by making a circuit around Philadelphia touching a number of the outlying towns. Many of the cars also made their runs under sealed hoods, and there were several of them that went through the entire 200-mile non-motor stop run on the high gear. In nearly all cases the cars carried a full load of passengers over the whole distance. Only three sent in anything but reports of perfect scores. The Springfield, Ill., car stopped its motor on the ninety-ninth mile

owing to carbureter trouble, but it started again within a few minutes and finished the 200-mile run without again stopping the motor. The Charlotte, N. C., car, after going 135 miles in 4 hours 43 minutes, was forced to stop because it had burnt out a connecting rod bearing. The Mexico City, Mexico, car had trouble with the oiler and had to stop after going 177 miles. All the other entries made perfect scores and the work of each car has been certified to by observers who had been previously appointed.

LONG ROAD RUN IN ELECTRIC

Chicago, Nov. 11—Another manufacturer of electrics is seeking to demonstrate the road utility of his product by making a long trip through the country, the maker being O. P. Fritchle, of Denver, who, accompanied by W. P. Pfaff, reached Chicago Monday night and left this afternoon for the east. Mr. Fritchle is striving to drive from Lincoln, Neb., to New York city in 21 days and apparently he is well up on his schedule, for he now has 700 miles to his credit in 10 days' running. He was obliged to ship from Denver to Lincoln because of the fact there are no charging stations between those two cities. Since then he has been making extraordinarily good progress, although he found the Iowa roads so muddy that he was slowed some. Still he kept moving, which was not the case with two gasoline cars he encountered, whose owners were waiting for the highways to dry up so they could continue their tours. The Fritchle safely navigated the desert and made light work of the hills. From Chicago it goes east by way of Pittsburg, which will take it over the Allegheny mountains. From New York city Mr. Fritchle will drive to Washington, where he intends establishing a branch. He is driving a victoria which is geared lower than usual for hill-climbing, but even with this he claims he gets 18 miles an hour out of it. The Fritchle is guaranteed to do 100 miles on a charge, but its maker says that on smooth city streets he can do 150 miles.

SMOKE PROBLEM SOLVED

Paris, Nov. 2—So severe are the Paris police against smoky exhausts that the Automobile Club of France has been obliged to fix up an anti-smoke apparatus in its garage. It is a simple apparatus, consisting of a metal pipe leading into the chimneys of the building, provided with a flexible end fitting over the car's exhaust pipe, and an electric fan operating a ventilator. If it is discovered, on starting out, that an engine is smoky, it is immediately linked up to the piping and allowed to run until all the extra oil has been drawn off. It is proposed to fix similar apparatuses in all the city garages. Their use would be cheaper than being caught by the police and being summoned for smoking before a magistrate.

BIDS FOR POPE PLANTS

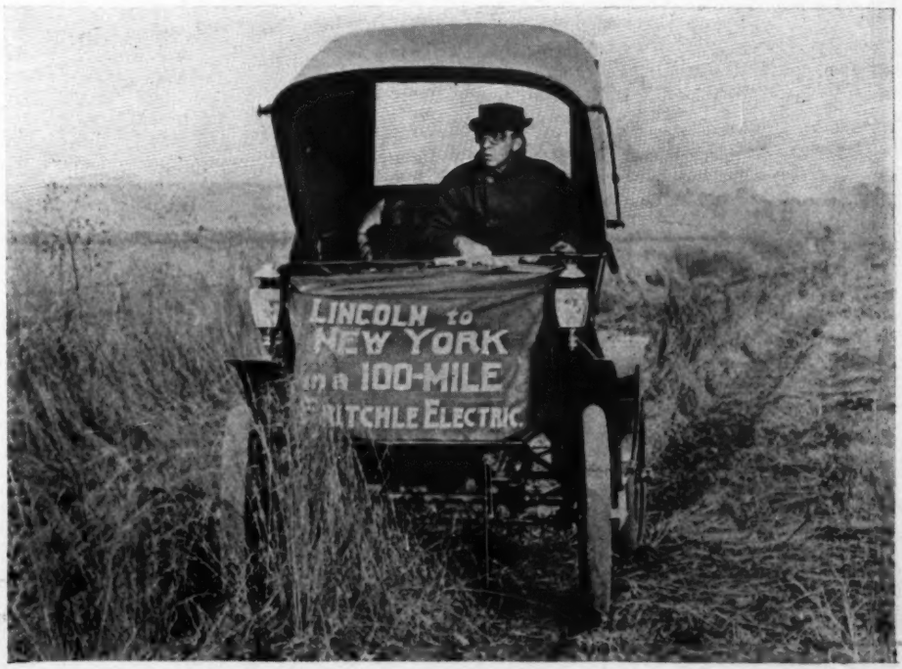
Reorganization Committee Offers $1,500,000 — Sale of Hagerstown Factory Authorized

Hartford, Conn., Nov. 10—Special telegram—Vice-Chancellor Howell, of Newark, N. J., today took under advisement until Thursday of this week a petition filed by Lindabury, Depu & Faulks as counsel for the receivers of the Pope Mfg. Co. asking for instructions regarding an offer of $1,500,000 made by a reorganization committee for the assets, less cash, in the hands of the receivers of the Pope company August 1. Should this sale be authorized, as there is every reason to believe it will, the receivers will at once pay a final dividend of 25 per cent, making 100 per cent in all, to holders of approved claims against the company. The vice-chancellor also made an order authorizing the sale by the receivers of the Pope company's plant at Hagerstown, Md., from which all mechanical equipment has been removed, for $57,500 and of a bicycle factory at Elyria, O., owned by the Federal Mfg. Co., all of whose stock is owned by the Pope company, for $35,000. It was stated by receivers' counsel that the reorganization committee approved of both sales, the cash in the receivers' hands to stand in lieu of the respective plants in the plan of purchase submitted by the reorganization committee. It appears that about 98 per cent of the first preferred stockholders and over 90 per cent of the second preferred stockholders have given their assent to the reorganization scheme and have deposited their respective stocks in accordance with its terms. The plan provides for the issue of the reorganized company of $800,000 of 6 per cent notes secured by a first mortgage, $2,500,000 of 6 per cent cumulative preferred stock and $4,000,000 of common stock of the company.

Here in Hartford there is the belief that the Pope company's affairs will be straightened out and that the local plants will soon be running at their old time capacity. Hartford always has occupied a prominent position in the motor industry, but it received a set-back when the Pope and Columbia plants ran onto financial shoals.

RAINIER HOPES TO RESUME

New York, Nov. 9—A reorganization of the Rainier Motor Car Co., against which an involuntary petition in bankruptcy was filed last week, is probable, according to the officers of the concern. "It was simply a case of not having enough cash to get through the product we had planned for 1909," said Paul Lineberger, general manager of the company, today. "Our assets are far in excess of our liabilities, but during the financial stringency we have been unable to raise the cash to meet our material bills and our big payrolls. With better times at hand we are confident of being able to put through the reorganization we have in mind." The liabilities of the company are $220,000, of which $50,000 is secured. The cars and material on hand in this city are reported to be assessed at $50,000. The company was incorporated in this city on March 7, 1907, with a capital of $1,000,000, made up of $800,000 common and $200,000 preferred stock. The petition was filed by Pembroke C. Chrysler, William J. Higgins and the Hartford Suspension Co. The claims of Chrysler and Higgins are for commissions on the sale of motor cars, the former asserting that $468.01 is owing to him and the latter $543.75. The claim of the Hartford Suspension Co. is for $262.50 for goods sold and delivered.



FRITCHLE ELECTRIC ON THE PRAIRIE EN ROUTE TO CHICAGO

American Method in Motor Car Exposition

By Charles Clifton, President of Association of Licensed Automobile Manufacturers

AS a yearly event, the converging point of past and future items of interest, the motor show is the thing—the result of the foresight, ingenuity and labor of the factories during the past year. And yet the preparation and conduct of the show itself is alone a world of work and detail. For many months the modus operandi of the ninth show which will open at Madison Square garden, New York, on the third Saturday of January has been under way. The volume of labor and responsibility entailed on the show committee and its secretary is difficult to realize. The culminating success does not disclose what has passed to bring it to fruition. A clear conception and knowledge of the art and trade are necessary.

Madison Square garden is made a complete city in itself. For example, a telephone system larger than used in any city of the second class is especially installed. Several bags of mail are received daily. The show is one of the biggest trade expositions held in New York, as to variety and number of exhibits, the number of square feet of floor space utilized, value of goods shown, number of attendants required in conducting the show as a whole and its exhibits separately. More than 3,000 employes and attendants are regularly on hand. The captains of the industry are there.

In the preliminary stages, engineers measure up the building to make use of all available area for exhibition purposes, considering the comfort and safety of the public as to passageways and regular and emergency exits. Then the architect studies the building to get from artistic standpoints a harmonious decorative scheme in keeping with the floor plans of the engineers—lending itself to the practical side of a trade exhibition. Now follow the constructing builders, to overhaul the building, to bring about the required result. Henceforth the work of preparation divides itself into two great divisions, one of which involves the almost endless communications with the trade regarding space, the preparation of thoroughly indexed rules for the conduct of the show, just to the large and small exhibitors and the management. Above all a higher standard is maintained. Exhibits which could reasonably be considered freakish or of negligible interest, or irrelevant to the needs of the motorist, are prohibited and are not shown in the garden.

The show committee has not only maintained the highest standard in the art of show preparation and conduct, but has been the pioneer in many methods now generally accepted in this country as matters of course. Conspicuous among these is the plan of having uniform decoration for all exhibits, obviously necessary for the desired effect of suitable background and setting for the introduction of the new motor car models. Motor shows abroad never have reached this stage of development, but they may do so in time.

The other great division of work in making the show is that of the architect and decorator, who have just searched the world over for what is appropriate, is best and newest in art. An astonishing number of different kinds of workmen are employed by them—artists, carpenters, drapers, carpet-layers, plaster workers, modelers, sculptors, electricians, telephone gangs, linemen and wiremen, cabinet makers, scene painters, plain and fancy iron-workers, sign painters, steeple-jacks, riggers, laborers, freight handlers, etc. The scene of the show nearing completion for opening is one of the most interesting and thrilling events it falls to the lot of the average man to see. Great hurry, together with exactitude and high-class work; great crowds of workmen; numerous foremen and superintendents directing and driving the men; designers and contractors whose increased reputations are involved, work ceaselessly for days without sleep. Wit, humor, camaraderie permeate the whole. After the show is installed and opened the complete city, under the A. L. A. M. management, is evident, divided into the business and financial sides.

Complete in and out freight and express offices are in working order. More than 10,000 pieces of mail are received daily. The telegraph ticks. The telephones at their busiest time handle more calls than the Syracuse telephone system at its busiest time. A complete day and night police force, uniformed and plain-clothes men, properly officered, patrols the garden. Ticket-sellers, takers, checkers, counters, porters, cleaners, electricians and wire-men are busy. Decorators constantly keep their work in shape. Carpenters and carpet-layers are always at hand. Bands and orchestras attend. Cafes, restaurants and rathskellers are in operation.

The most remarkable feature of all in some ways, is the demolition of the show. What has taken hundreds of people months to get ready in advance, materials, several million dollars' worth of exhibits, are, beginning at 10 o'clock the last night, within the following 15 hours, packed and shipped from the garden; the entire exhibit, probably 100 carloads of freight, removed; the structural work taken down, and the building put in its original condition. But the object has been accomplished. The A. L. A. M. yearly models have as a whole been suitably submitted to the public by the big organization.

Uncle Sam's Reports on Late Exports

Washington, D. C., Nov. 9—Exports of motor cars and supplies during September last show a substantial increase over those of the same month a year ago, according to the latest compilations of the government's statistical bureau. One hundred and twenty-eight cars, valued at $235,607, and parts to the value of $42,310 were exported in September last, while in September a year ago the number of cars exported was 113, valued at $179,041, while the value of the parts exported was $32,832. However, during the 9 months' period the number of cars exported decreased from 2,421, valued at $4,442,478, in 1907, to 1,812 cars, valued at $3,805,569, in 1908, while the value of the parts exported declined from $521,407 to $477,159 during these periods. During September last cars and parts were shipped to the following countries: United Kingdom, $5,015; France, $7,011; Germany, $7,693; Italy, $304; other European countries, $22,924; British North America, $131,278; Mexico, $15,896; West Indies and Bermuda, $9,895; South America, $11,979; British East Indies, $3,780; British Australasia, $8,876; other Asia and Oceania, $6,101; Africa, $223; all other countries, $1,942. There was quite an increase in the number of motor cars imported during September, the number being 219, valued at $352,295, as against 102, valued at $253,628, imported in September, 1907. During the first 9 months of 1907 the number of cars imported was 730, valued at $2,310,922, while during the same period of this year the number had increased to 956, the value of which was only $1,803,889. This indicates a tremendous drop in the price of foreign cars. Imported parts in September, 1907, were valued at $37,594, increasing to $103,038 in September last, but during the 9 months' period these imports dropped from $546,801 in 1907, to $451,469 this year.

Cars were imported from the following countries in September last: United Kingdom, thirty-three, valued at $54,770; France, 156, valued at $241,151; Germany, two, valued at $6,298; Italy, twenty-seven, valued at $47,576; other countries, one, valued at $2,500.

Excerpts from official reports received lately by the federal trade promotion bureau regarding the outlook for the sale of American cars in certain foreign countries show there is a good field for the sale of motor cars in Uruguay, but before American cars can gain an entrance the prejudice against them must be overcome. This can be done only by sending the best

Foreign Motor Car Trade And Imports

cars there, with first-class chauffeurs to drive them and keep them running by the side of those made in Europe for at least 1 year. If they can prove their equality with other makes, business doubtless will follow. Three years ago not a motor car was to be found in Uruguay, but according to the official inspector of vehicles there are now 138 in use, four of them being American cars. There is a very strong prejudice against American cars, owing to the dissatisfaction created about 12 years ago by the sale of some 300 inferior grade bicycles, which were sold as high-grade machines. These bicycles were of the cheapest class, and proved wholly unfitted for the roads and pavements of Uruguay. Since then a very strong prejudice has existed against anything manufactured in America, but it is believed this prejudice can be removed.

India is rapidly becoming an inviting field for manufacturers of motor cars, and it seems strange that American manufacturers are taking no practical interest in the awakening. European motor cars are seen everywhere in India, but the American car is almost completely absent. There is a good field in Calcutta, and American manufacturers should enter it before European agents get full control. Catalogs, however attractive, will not suffice in getting business in India, say the government reports.

Market conditions as well as the opinions of dealers would indicate that American motor cars can be successfully introduced into Spain. The majority of the cars now in use there are of Spanish make, there being two motor car factories, one at Barcelona and another at Vitoria, near Bilbao. At the present time it is estimated that the number of cars in use throughout Spain is about 3,000, distributed as follows: Madrid and district, 500; Barcelona and district, 600; Guipuzcoa, including San Sebastian, 300; Vizcaya, including Bilbao, 200; Seville, 100; all other places, 1,300. American manufacturers desiring to enter the Spanish market would do well to note the following pertinent facts: Customs duties on motor cars amount to $15.45 per 220 pounds on chassis weighing less than 1 metric ton; and $19.30 per 220 pounds on cars weighing more than 1 metric ton. If the car be complete and have an open body, a further duty of $38.60 is assessed; if the car has a closed body the extra duty amounts to $61.76. Catalogs and price lists should be in Spanish, and weights and measures in the metric system. Prices should be quoted in pesetas, one peseta equaling 17 cents.

Motor Makes Passing of Horse a Certainty

By John N. Willys, President of the Overland Automobile Company of Indianapolis

SUPERIORITY of the motor over the horse and of the car itself over the horse-drawn vehicle, is being more forcibly demonstrated each day. Horse users and horse lovers may shut their eyes to the inevitable and say that the horse has lost none of its prestige; that horses are as much in evidence as ever, but the fact remains that the motor car has taken an everlasting position at the top. It surpasses the horse in speed, reliability, handiness, comfort and luxuriousness, and because of these facts, it has largely created a new field for itself above and beyond that filled by the horse vehicle, and in this new field it has undoubtedly met a public need which is little in common with the horse vehicles and which is growing year by year.

No better illustration can be cited to demonstrate the wonderful hold the motor car has upon the public than the vast amount of sales made through last winter and particularly during the time of the panic. While trust companies were closing their doors and other banks and industrial institutions were tottering, motor car manufacturers were increasing orders for steel and parts.

As compared with the horse the car is not only swifter for travel, but in the commercial end especially, it is a money and time-saver. The progress made by commercial vehicle buyers is phenomenal and business men are swiftly learning that it is a strictly business proposition to replace horses by self-driven trucks and delivery wagons and they are doing it, particularly in big cities.

Another forcible fact that brings strongly home the predominance of the car over the horse-drawn vehicle is the rush of the carriage dealers to the motor car agency ranks. Men who have owned and have sold horses and carriages during their business career, have gradually succumbed to the inevitable and stampeded motor car concerns for agencies. At the recent national carriage show in the Grand Central palace even the most sanguine motoring enthusiasts were surprised by the large number of car exhibitors lined up for comparison with the horse carriages. Reliable reports say that more actual sales were made by the car exhibitors than by carriage makers, the promoters of the exhibition.

Then again is the wonderful increasing use of taxicabs; a mode of service which probably has hit the horse users hardest. The taxicab service in the large cities and even in the smaller, has grown to such proportions that there has been a scramble among manufacturers to place taxicabs in the field. In New York city there are at least 1,000 cabs in daily use and taxicab concerns have orders placed for as many more. Taxicab operating companies are being formed in practically every important metropolis in the country, which means a heavy depreciation in the use of horse cabs. The service is not only much cheaper but swifter. In the stormy days of last winter the little vehicles were constantly running, regardless of blizzard, slush and rain. The taxicab habit has become permanent. It has eliminated the wrangle with the cabby regarding the fare and consequently is appreciated by the public.

The commercial vehicle is more powerful, will carry a far greater load, is cheaper to maintain, it never tires, and above all, is a vehicle that should appeal to every humanitarian. In the hot summer months it is no uncommon sight to see a beautiful draught horse fall dead before its load. The hot weather has no effect on the motor truck. It works equally as hard in one kind of weather as another. It will not balk at steep grades or shy at obstacles along the road and if handled in a common-sense manner is "on the job" at all times.

Practically all the maintenance which the motor truck requires is a sufficiency of gasoline, oil, and occasionally a new tire. The motor vehicle is never ill, and it practically will live forever. The life of a commercial truck wholly depends upon the care given it. It must not be expected that the motor will run continually without being oiled and kept cleaned. The driver should care for it as an engine driver looks after his engine.

Another matter of importance is the fact that the use of the commercial truck is relieving traffic. It does not take up as much room on a congested street as a two or four-horse outfit. It is easier handled in crowded places than are horses. Department stores, grocers, clothiers, contracting teamsters, banks and scores of other branches in the industrial world are adopting the motor vehicle.

The motor truck has sounded the death knell of the stage coach and already the motor vehicle has been installed at the seashore resorts and is being used in conveying summer visitors from the depots to the hotels. For a decade this transportation has been done by the horse and stage. In other words the commercial vehicle has revolutionized our commercial world. It seems to have made distances shorter and to bring terminals and docks near each other. The relegating of the horse from our busy streets to the pasture is inevitable, as anyone who watches the signs of the times and watches the traffic of municipalities easily can tell.

The Readers' Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems and invites a discussion of pertinent subjects. Correspondence is solicited from subscribers and others.

OIL AS ENGINE COOLER

IPAVA, ILL.—Editor Motor Age—Will Motor Age tell me if an oil can be used for cooling the engine instead of water and alcohol, and if so what kind of oil would be best? Would it cool the engine as well as water when there is a pump to circulate same?—L. Clemens.

Oil can be used most efficiently to cool a motor in summer time, this having been conclusively proven in continuous tests in which oil was circulated through the water system at the same speed as water, and the motor gave considerably improved results. In recent experiments, although there was no trouble cooling water to the thermo-capacity of the radiator, yet when oil was passed through instead of water there was great disparity of results. One type of radiator, which cooled effectively with water, gave poor results when oil was used; in fact, the radiator giving the poorest results with oil gave best with water, and vice versa. From this it is evident that conditions must be altered when a change is contemplated from water to oil for cooling work. In one particular test it was found with a temperature drop of 12 degrees with oil, the radiator gave a cooling effect of 700 cubic units, but when water was used, only 70 per cent as much heat was radiated, in spite of the fact that the air circulation was increased. In these experiments the radiators used were standard makes and designed for water use. These several tests, made by H. B. MacFarland, professor of applied mechanics and thermodynamics at Armour Institute, Chicago, indicated that the best radiators, when using oil, are 50 per cent more efficient than when using water. The experiments also proved that the engine was more efficient because it was possible to use the oil at a much higher temperature in the jacket without boiling than the water could be used at. The oil used in these tests was a very common grade of machinery oil bought at 12 cents a gallon.

OILING TROUBLE EXPLAINED

Mankato, Minn.—Editor Motor Age—Through the Readers' Clearing House will Motor Age tell me how to remedy the trouble I am having with my model 10 Buick runabout. The splash system is employed and the front cylinder carbonizes and lubricating oil quickly accumulates therein while the other three cylinders are dry and in perfect condition.—S. B. Wilson.

Your trouble is that the oil is going past the piston rings in the front cylinder. The reason for this is doubtless because of the sticking of one of the rings in the piston grooves. You may be able to overcome this by injecting into the cylinder head an oil gun full of kerosene and leaving it for some time, being careful to empty the crankcase of oil before doing this. Should this not work a remedy, the best thing to do would be to have the piston taken out and the rings cleaned.

CONCERNING BROKEN WHEEL

Newman Grove, Neb.—Editor Motor Age—Can Motor Age tell me where I can have the front wheel of my Earl roadster repaired, and if it is necessary to put in an entire new set of spokes when the hub and felloe are all right?—W. C. Hastings.

Not knowing the make of wheel used on your roadster, it is impossible to state whether a complete set of new spokes will be necessary. In certain makes of wheels where the inner ends of the spokes are considerably interwoven a complete new set will be needed. Should the spokes be separate at the hub, or only glued together, it would only be necessary to replace the number of spokes actually broken. This could be done at a good carriage builder's shop, care being taken to see that only seasoned timber was used. Perhaps the safest plan would be to send a sample spoke to a wheelmaker and have him furnish the new spokes, and get the carriage builder to put the spokes in place and do the repair.

CAUSES MOTOR POUNDING

Dayton, O.—Editor Motor Age—I have a model C Winton having an engine with a 3½-inch bore and 5-inch stroke, Remy magneto and a 1908 model W 1-inch Holley carbureter. When the throttle is suddenly opened, or on a hard pull with the throttle wide open, the engine hammers badly. On high or low speed either on light or no load the engine does not hammer. All mechanical parts have been gone over and all lost motion taken up but without results. I have tried another magneto, also a storage battery, without effect. Could the trouble possibly be in the carbureter? The Holley company says a 1-inch carbureter is suitable for engines from 3¾ to 4½-inch bore; whereas, it will be noted my engine is 3½ by 5 inches. I have noticed that the engine does not hammer so badly with the carbureter needle valve open so as to give an overrich mixture. Can Motor Age offer any feasible suggestion to remedy the trouble? —P. W. K.

From your statement the motor only pounds when under load, which is borne out by the fact that opening the throttle for a "hard pull" or on a hill produces this pounding. You state that when running on high speed or low without load there is no pounding. On the face of it, it looks as if your spark is advanced too much. The position of the spark lever may not show this, and it may be the timing arrangement on the magneto has shifted, causing an earlier spark. Should it not be the timing, then carbonization in the cylinders would produce the same result. This carbonization, due to feeding too much oil, would cause pre-ignition, which would develop a pounding. The most peculiar situation of all is that you have noticed the motor does not pound so badly when the carbureter needle is open to give an over rich mixture, for it is just at such a time that the motor should pound more. The trouble is not with the carbureter. Carefully examine your timer as above indicated, and to verify which hold the spark plug out of the cylinder to determine exactly where the piston is when ignition takes place. If the timing proves to be all right, then give the cylinders a thorough cleaning with kerosene, or any of the many carbon-removing solutions that are on the market. This done, reduce the oil feed and note the results, and if needed readjust the oil.

DRESSING FOR TOPS

Goldfield, Nev.—Editor Motor Age—I am a subscriber to Motor Age and take the liberty of asking for the names and addresses of manufacturers or jobbers of dressing for renewing or finishing tops and upholstering of motor cars.—P. A. Pollock.

The following concerns manufacture leather top dressing: Buffalo Specialty Co., 375 Ellicott street, Buffalo, N. Y.; F. S. Carr, 74 Pearl street, Boston, Mass.; Chicago White Lead and Oil Co., Chicago; James W. Cummer Co., Cleveland, O.; Dix Mfg. Co., Lewistown, Pa.; Jewell Mfg. Co., 914 Marshall boulevard, Chicago; Montgomery-Washburn Co., Saugerties, N. Y.; West Mfg. Co., Rockford, Ill.

USING RESIN ON CLUTCH

Flint, Mich.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me if it is advisable to use resin to keep a clutch cone from slipping? Will this force the clutch to take too firm a hold, or by controlling same with lever, does Motor Age think it will be possible to let the clutch in easily and taking hold gradually? Is castor oil a good remedy for the same trouble?—G. H. Yeats.

If the clutch slips do not use resin; it will result in it gripping or biting too fiercely at the start, the result being the

car is started with a jump. Another bad effect of resin is that when it is well warmed it allows slipping, which is very undesirable. After the car has stood until cool and another start is to be made, the clutch will engage suddenly. Castor oil is the best solution, and a couple of ounces of it well distributed over the leather surface would help considerably. Give the clutch this oil treatment at night, and have it released for 8 or 9 hours afterwards, giving the oil a good opportunity to work into the leather. This can conveniently take place over night. Should the leather be too oily a little Fuller's earth, or ground chalk can be used to advantage to absorb some of the oil. Should this treatment not give the desired results, the only recourse left is to tighten the engagement spring of the clutch.

NOISE IN MOTOR BUGGIES

Roswell, N. M.—Editor Motor Age—Will Motor Age explain why a motor buggy makes more noise than a motor car?—C. W. Maxwell.

The reason a motor buggy appears to make more noise than a motor car is undoubtedly due to the fact that the noise-provoking parts of the machinery are not so thoroughly encased as in the regular motor car. Looking at a motor buggy the power plant is higher and it often happens there is not a mud apron beneath the machinery; in fact, with several machines no attempt is made to enclose the machinery, so that the noise has free scope to travel. It is natural that a motor buggy with a hard tire should have a little more vibration. It should not be overlooked that many motor buggies are air-cooled and after being in use for a time the valves become a little noisy unless their spring tension is carefully looked after. It is natural to expect that in some of the more recent editions of motor buggies the workmanship in cutting the gears is not as accurate as many of the high-priced cars, with the result there is much more noise when the car operates.

TWISTING A STEEL SHAFT

LaSalle, Ill.—Editor Motor Age—If not taking up too much time I would like to set before Motor Age a problem which I believe it can solve. Mr. ————, the inventor of a direct drive, has up to the present used a high-grade steel shaft 1⅝ inch in diameter. On a recent demonstration the shaft suddenly twisted ¼ inch in 1 inch length. Can Motor Age give me an approximate figure of what strength would be required to twist a shaft in this manner? Since this incident a larger diameter shaft of chrome nickel steel has been used with satisfactory results.—V. A. Matteson.

In the first place, the fact that the shaft took a "permanent set" prevents anyone from afterwards calculating the strains that produced the "set" unless the point of "yield" was noted during a test in a machine for the purpose. In the second instance, the stress that would produce "set" would also depend upon the mode of application, which is not shown, and the quality of material, which is not given, but one can assume that the stresses were pure "torsional" and take the materials to be as good as Krupp E. F. 60.0, in which:

	Average normal
Tensile strength	110,000
Elastic limit	100,000
Elongation is 2 inches	16%
Reduction of area	60%

The diameter of a shaft, say 1¼ inch, if it is assumed that:

Pa = moment of the applied force
J = polar moment of inertia
c = distance of the remotest fiber, from the axis of rotation

$\frac{S\,J}{c}$ = resisting moment

S = unit shearing resistance
a = length of the lever arm; of the applied force
α = alpha = angle of torsion

$$\alpha = \frac{3\ 2\ Pa\ 1}{\pi\ d^4\ G}$$

$$J = \frac{\pi\ d^4}{32}$$

$c = \frac{1}{2}d$

$$Pa = \frac{S\,J}{c} = \frac{\pi\ d^3\ S}{16} = \frac{d^3\ S}{5.1}$$

$= .1963 d^3\ S$
$= .1963 \times 1.25^3 \times 30{,}000$
= 11,400 for the Krupp steel on a basis of one-third the known elastic limit.

$$\frac{Pa}{12} = \frac{11{,}400}{12} = 950$$ pounds at one foot radius

The torque of a motor to equal this would have to be 950 pounds and at 1,000 revolutions per minute, the horsepower would be:

$$H.P. = \frac{2\ \pi \times 1{,}000 \times 950}{33{,}000} = 180$$

The angle of torsion—alpha—would be, in a 10-inch length:

$$a = \frac{180e}{\pi} = \frac{180 \times 32\ Pa\ 1}{\pi^3 d^4\ G}$$

$$= \frac{583.6\ Pa\ 1}{d^4\ G} = 2° 42' = 2 \text{ deg. } 42 \text{ min.}$$

While the question does not seem to be answered, this information should serve as a guide to the procedure necessary in such cases.

ON HYDROGEN AND OXYGEN

Nyack-on-Hudson, N. Y.—Editor Motor Age—What is the formula for hydrogen and oxygen for the best combustion in an explosive engine? Can Motor Age give me any idea of how many pounds of water would be required to operate the average 20-horsepower gasoline engine giving 20 horsepower, if it were possible to decompose water for this purpose? If it were possible to decompose water by passing it through red-hot pipes, what would happen to the H and O? Would they both come out fixed gases? Or would the O form an oxide with the iron and be consumed? What proportion of air would be necessary to be mixed with the H to form an explosive mixture? Not taking into account the cost of decomposing the water, does Motor Age think it possible to get the correct mixture for an engine in this way? At what degree of heat are H and O decomposed? In burning H in the open air would a hotter fire be the result with air under pressure? If so, about what pressure? If by burning a pint of kerosene per hour it were possible to completely vaporize 1 gallon of kerosene, ready for mixture with the air for an explosive mixture, and by a neat little device which could be placed under the hood of a motor car alongside of the engine, does Motor Age consider such a device would help bring kerosene into use in explosive engines? Or are all manufacturers satisfied with gasoline, and the present system of vaporizing?—H. T. E.

Confining a mixture to H and O, the product of combustion would be water, the formulæ for which is H_2O. The value of the second question is not apparent; water is in a state of finality, as respects the relations of the components. You would have to use coal and an electrolytic process to split the water into its components; you might better use the coal direct. Water, in contact with a red-hot pipe, makes steam. This steam, separated from any water, superimposes a superheated state. Superheated steam is not a permanent gas. Not considering the final effect of superheating steam from a point of view of the separation of the components, it is enough to say that a point is first arrived at under the conditions in which the steam ceases to be valuable for power purposes. In steam motor car practice, and in recognition of this fact, the pressure is kept below 600 pounds per square inch. Obviously the components of water are hydrogen and oxygen. These elements, isolated, are in gas form, and in a state of finality; hence they are fixed gases. Oxygen will form with iron to produce iron oxide at a temperature and under conditions involving the iron compounds during the selective freezing period. You cannot, therefore, expect to form oxide of iron—excepting as a surface indication—at low temperatures. Hydrogen will burn with enough oxygen to form water, the formulæ for which are above given, and if the oxygen is to be taken from the air it must be in the ratio of H_2O. Water is not decomposed in practice unless by the electrolytic method. In the decomposition of water by the electrolytic method, reference may be had to the ex-

periments by Lord Layleigh, briefly as follows: "Hence 1 ampere liberates .00001038 grams of hydrogen. The strength of the current, in electrolytic bath, for any value of the hydrogen, may be set down as follows:

$$I = \frac{\text{weight in grams of H per second; liberated}}{.00001038}$$

and in the abstract

$$I = \frac{\text{weight of any element in grams, liberated per second}}{.00001038 \times \text{chemical equivalent of that element}}$$

when I = the current in amperes.

The current in amperes that would liberate 1 gram of hydrogen would simultaneously liberate 8 grams of oxygen. The actual power required in the process would depend upon the electromotive force of the "couple" involved. Taking into account the electromotive force —counter—then, determining the electromotive force necessary, in view of the resistance of the circuit in ohms, the potential difference can be ascertained. With the potential difference in volts it will then be possible to determine as to the power required to liberate hydrogen and oxygen. The practical formulæ for the determination of these values would look as follows:

$W = E I$ W = energy in watts

$H.P. = \frac{E I}{746}$ E = electromotive force in volts

I = current strength in amperes.

You will observe from the information thus far given that your proposition entails some complexities, and is more of an undertaking than can be disposed of in a limited space. A sufficient insight is here given to enable you to intelligently drop the subject, or serve as a clue to further research.

In burning hydrogen a hotter fire would be the result of the mixture under pressure, because for a given mixture the greater the pressure the greater would be the quantity of the hydrogen present. Since hydrogen is a fuel under certain conditions, the more you have of it the more heat will be manifest as the result of its association. Your last proposition savors of a long journey at the behest of air explosion. There is a great difference as between using liquid fuel, to be mixed with atmospheric air, and your proposition. Feeding vaporized kerosene into a train of atmospheric air en route to the combustion chamber portrays a hazard, since "popping" in the carbureter is sure to follow a mal-condition of the mixture. Gasoline is a very satisfactory fuel. It is difficult to state the degree of satisfaction entailed; manufacturers will have to put up with it until they find something better. In Germany, France and England alcohol of the denatured bran is used extensively in explosive engines. Alcohol is a safer fuel than gasoline because of its less explosive nature. It will stand a much higher compression than gasoline. Naphtha and heavy oils have a considerable following in England, and their use is very satisfactory.

MAKES ZIG-ZAG CHAIN GRIPS

Monroe, Wis.—Editor Motor Age—Can Motor Age give me the address of the company making the zig-zag chain grips for motor cars?—J. J. Wescott.

Tire chains arranged in zig-zag manner as you suggest are manufactured by the Invincible Tire Co., Hartley, Ia.

SIZE OF EXHAUST LEAD

McDonald, Pa.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me what should be the size of the exhaust lead from the engine to the muffler. I have a four-cylinder motor with 5-inch bore and 5½-inch stroke.—Frank Collins.

It is impossible to give the exact size or diameter the exhaust lead from the valves to the muffler should have, because you do not give the diameter of the exhaust valves or the amount of lift. Undoubtedly 2½ inches would be sufficient to determine the diameter of this pipe, but 3 inches would be more efficient.

IDE DRAWS COMPARISONS

New York, N. Y.—Editor Motor Age—Because of my absence I had no opportunity to reply to R. Fayers in Motor Age issue July 9, page 27, concerning my ideal car. Mr. Fayers states "it is remarkable how closely Mr. Ide has come to the Palmer & Singer Six-Sixty in everything but price." I have listed some of the differences and specifications of my ideal car and the Palmer & Singer.—J. J. Ide.

Ideal Car	P. & S. Car
Bore, 5 inches	Bore, 4¾ inches
Stroke, 5 inches	Stroke, 5 inches
Low-tension ignition and Atwater-Kent	High-tension ignition, magneto and batteries
30 gallons gasoline	25 gallons gasoline
Hele-Shaw clutch	Multiple-disk clutch
Transmission, direct on third and fourth	Transmission direct on third speed
Enclosed chain-drive	Shaft drive
Two brakes on countershaft, two expanding on rear wheels	Four brakes on rear wheel drums, all expanding
Front springs, 48 in.	Front springs, 34 in.
Rear springs, 52 in.	Rear springs, 52 in.
Tires 36 by 4½ in.	Tires, 34 by 4 in.

OIL AS AN ANTI-FREEZE

Flandreau, S. D.—Editor Motor Age—Will Motor Age give me its opinion as to the use of lubricating oil in the cooling system—as an anti-freeze—in place of alcohol and water or other compositions for cold weather use? I understand it has been used by some quite successfully. Some experienced users of motor cars have suggested the changing of the rear tires after the first year's use from right to left, and at the end of the second year from rear to front in order to get more wear out of them. Does Motor Age think this advisable? Would it be advisable to change the whole wheel from one side to the other? It has been claimed that Waukesha, Wis., and Hart, Mich., are the champion motor car towns. We have fifty motor cars in Flandreau, which has a population of fewer than 1,700.—W. A. Krause.

In the columns of the Readers' Clearing House this week appears information on the value of oil-cooling as compared with water, and which practically solves the problem as to the use of oil-cooling in cold weather. The anticipated trouble in connection with oil for winter work would be the slow circulation through the radiator at the start until the oil reached a certain degree of thinness, after which circulation would be regular. Oil has been used for cooling purposes, but Motor Age never knew of it being specially used in winter, because of the freezing of water. Your suggestion regarding changing rear tires from right to left and after the second year putting a rear tire on the front wheels in order to get more wear out of them is a good one. If roads were level the wear on a tire would be direct on the tread, providing the wheels were not cambered; but, because of the varying camber of the roads, it is found that tires wear irregularly, more on one side of the tread than on the other, and by transferring a tire from one wheel to another this wear can be distributed over the tread. It would be better not to change one rear wheel from one side to the other. In ordinary usage a tire could be changed from a left wheel to a right wheel two or three times in its life time, each change being made before the wear is too great. On front wheels which are dished, the wear takes place on the outer part of the tread; on rear wheels which are not dished the tire takes place on the inside of the tread first, owing to the camber of the road, and on rear wheels which are dished, as are the Peerless, the wear comes on the outer part of the tread first.

DISCUSSES WATER-COOLING

Converse, Ind.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me what system of water cooling—thermo-syphon or pump—is the better for a gasoline motor, and the reasons why?—Dr. H. G. Boyd.

The problem as to the most efficient method of cooling, whether by water circulation maintained by driven pump, water circulation created by differences in temperatures in different parts of the system and familiarly known as the thermo-syphon system, or cooling by oil, remains unaltered. The majority of American makers use a pump circulation with water as the cooling agent. The majority of foreign makers follow the same practice. But one or two foreign concerns, chiefly the Renault, has used thermo-syphon with the greatest success. This system give

a high efficiency which seems to be due to the very large diameter of water pipes for conducting the circulation of the water from the radiator to the cylinders and back again. Theoretically it appears that thermo-syphoning is more to be desired than the positive pump circulation. An example will show the reasoning on which this assumption is based. In thermo-syphoning the water in the jackets gets warm and rises, flowing from the jacket spaces to the radiator; as it cools in the radiator it travels to the bottom and is again ready for the trip to the jackets. The hotter the water gets in the jackets the faster it will circulate, irrespective of the speed of the crankshaft, and thus there is an automatic tendency to maintain the lowest possible temperature at all times. In contrast with this, in water circulation maintained by a pump, is the fact that the water circulation is proportional to the crankshaft speed, and always maintains this proportion. No matter how hard the motor may be working, with the crankshaft speed of 800 revolutions per minute the pump works at the same rate, the water flowing at the same rate also. It frequently happens that at one time, when operating at this speed, the motor may be running hot; whereas, at another time it may be working cool; but, in spite of these demands for more or less circulation, the pump maintains its regular work. As already pointed out, with thermo-syphon it is different, the speed of the circulation of the water depending solely on the water in the jackets, providing, of course, the tubes for the flow are in perfect order. The piping for a thermo-syphon system should be such that the top of the radiator is higher than the top of the jackets, so that the hot water from the jackets has an opportunity to rise in its flow. From the base of the radiator the cooling water flows to the coolest parts of the jackets. It is customary in two-cylinder cars, such as the Maxwell and Jackson, which have used thermo-syphon circulation, to have a pipe direct from the radiator base to each cylinder jacket as well as a separate return pipe. In the Gaeth car in which thermo-syphoning is used, large water pipes and connections are fitted and few sharp angles exist in these pipes. In the Atlas system extraordinary large water pipes are used.

ENGLISH TEST OF MOTOR RATINGS

London, Eng.—Editor Motor Age—In view of the many arguments on the progressive rating of motors, by which is meant the horsepower at different crankshaft speeds, the following ratings on a six-cylinder car with cylinders 4 1/16 inches in diameter may be of interest. The engine was run for 15 minutes at an average crankshaft speed of 1,863 revolutions per minute, and the mean brake horsepower developed was 94.5 horsepower. The following is the table showing the progressive rating:

Speed	Brake horsepower
400 R. P. M.	24.0
600 R. P. M.	35.5
800 R. P. M.	48.5
1,000 R. P. M.	60.0
1,200 R. P. M.	73.0
1,400 R. P. M.	85.0
1,600 R. P. M.	94.0
1,800 R. P. M.	99.5

All the above tests were carried out with the same adjustment in the carbureter, and no alterations or adjustments were made. The brake horsepower, according to the Royal Automobile Club's rating, for this engine would be 39.6.—Hugh Erat Harrison.

FASTEST MILE RECORD

La Salle, Ill.—Editor Motor Age—Will Motor Age, through the Readers' Clearing House, tell me the mile record, where made, who made it, name of car and when it was made?—W. N.

The fastest official mile was made on the Ormond Beach, Fla., February, 1906, when a Stanley steamer negotiated the distance in :28⅕.

HOW TO USE SOAP

Chicago—Editor Motor Age—One of the most important things in taking care of the motor car body is the cleaning. The accumulation of mineral oil and smoke from the burning of the same oil, as well as the dirt and grease on the body of the running gear, makes it difficult to remove with water alone. There is nothing that will cut or emulsify this accumulation of mineral oils and smoke like a high-grade potash soap—soft soap—especially if the soap is made of the proper grade of vegetable oil. The finer the grade of soap, the quicker and better it will emulsify the mineral deposits and make it easy to wash off with water. A filled or adulterated soap should not be used, as it requires excess of soda to hold the filler. It deteriorates with age.

The method adopted in using any grade of soap should be the one that will preclude the possibility of getting raw soap on the paint or varnish, and also to prevent waste of soap. The soap should be thoroughly dissolved in water before using. The method adopted by many of the large users of soap in cleaning automobiles, both in Chicago and New York, use the following:

Dissolve 1 pound of high-grade soft oil soap to each gallon of water and use from half to full pint of this solution to each pail of wash water, just enough to form good suds, or dissolve from 5 to 6 pounds in a 50-gallon barrel and fill the barrel full of water and dip this solution out in pail for washing. Do not put raw soap into the pail which is used for washing the car. Wet the car with clean water first, and then wash with suds, and immediately rinse with hose or sponge and clean water. After dry rub with soft cloth or chamois to bring up high polish. It is few, indeed, who understand the proper method of using soap on varnished surfaces, and few who realize that economy is gained by using high-quality soap. The above method precludes any waste except by those who desire to be wasteful. The car should always be washed off or wet with clean water to remove dry dust, as soap suds on dry dust tends to spot or streak the car. —W. M. Kelso, Monahan Antiseptic Co.

MAKES 60-INCH TREADS

Sheboygan, Wis.—Editor Motor Age—In the issue of November 5, page 14, Motor Age asked its readers to furnish Mr. Vrooman with information relative to makers who manufacture cars with 60-inch tread. For his information the Jackson Motor Car Co., Jackson, Mich., furnishes 60-inch tread without extra charge when specially ordered.—Arthur F. Schrant.

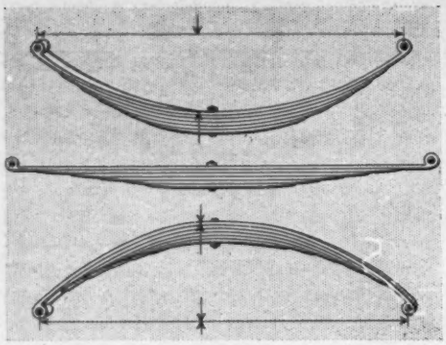
The Cameron Car Co., Beverly, Mass., furnish 60-inch tread on all Cameron cars when specified, and makes a point of such equipment to meet the requirements of southern roads.

MOTOR HEATS BADLY

Milwaukee, Wis.—Editor Motor Age—My four-cylinder motor heats badly when working under medium load and when on hills. I do not know what is wrong, whether the cooling facilities are inadequate, or parts are clogged up or dirty. Any information Motor Age can give will be greatly appreciated.—H. K. Duncan.

It is particularly difficult to explain the reason of the heating of the motor referred to. It may be due to carbon within the cylinder which can be removed with kerosene. The water circulation may not be in good condition, there being a possibility of the pump not working well or scales formed on the inside of the jacket walls. The carbureter may be feeding too much gasoline which would be discovered by a black smoke through the exhaust. The exhaust valve may be fitted or not seating properly, the result being that a part of the gases leak out during the compression stroke which would result in a slow explosion and consequent heating. Your timer may be out of adjustment, or your spark control in the steering wheel shifted from its regular position, so you are getting a slower spark than you imagine. The cylinder rings may be scored, resulting in loss of compression. There are a dozen or more reasons for a trouble of this nature.

THEORY AND PRACTICE IN CAR SPRINGS



FIGS. 1, 2 AND 3

EDITOR'S NOTE—This is Part II, of an article specially prepared by Thomas J. Fay, president Society Automobile Engineers, on the Theory and Practice of Spring Suspension. Part I appeared in Motor Age November 5, pages 18 and 19.

THE life of a spring is forecast by the maker thereof, almost independently of the quality of the material. If the spring is limber and it is so placed as to indicate spring play, just at the point of reversals of camber, the life will be shortened. The superior grades of materials will stand this abuse for a comparatively long time, but the dynamic life of steel, like the life of every other animated thing, is limited. Inferior materials, advantageously situated, might last far longer than the superior products working at a disadvantage. The initial camber to give a spring, for a given static camber, is a problem for the springmaker.

Figs. 1, 2 and 3 show three views of a given spring, under the conditions as follows: The spring under stadic load, indicating the stadic camber; straightened out under load; in reverse camber, in a testing machine, to the limit before permanent set.

It is worth while to study these three conditions in relation to springs, because they have to do with the life of the spring in service, and the easy riding qualities of the car due to spring action. It might be said in general that the greater the difference between the initial and the static camber, the more pronounced will be the easy riding qualities, and it might be said as well that the greater the initial camber and the greater the possible reverse camber, the better will be the life of the springs, especially if we take into account that the spring action in service will be limited between the two points, as represented by the initial camber on the one hand and the condition B, which means that the spring leaves will no more than straighten out in actual service. If the service conditions are such as to eliminate any reversal of camber, then it may be said the factor to safety will be represented by the amount of the reverse camber in a testing machine before permanent set.

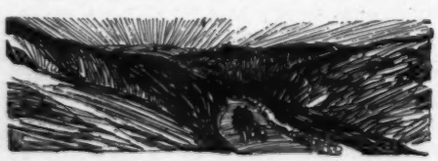
Life Period of Springs

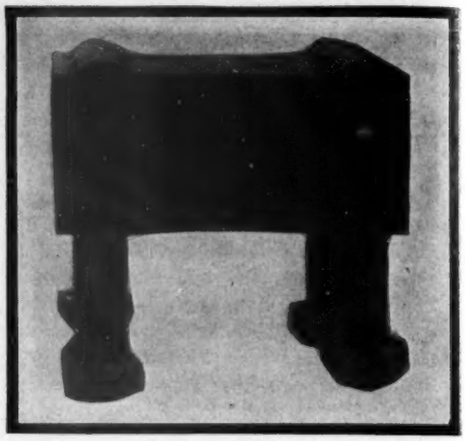
If springs are limited in their applications to the conditions as before given, even though these conditions may be regarded as favorable, it may still be said of the springs that their life is limited. The life, in fact, under a fixed set of conditions, will depend entirely upon the kinetic ability of the materials used—dynamic qualities of the steel. This is a matter that has been exploited at some length in the press and on the marts of steel, but to almost no purpose, since, forsooth, springs do break and the breakages are not limited to the kind that are cheap and claimed to be non-dynamic in their character.

At the present time every particle of steel that goes into every motor car, regardless of price, is said to be of a dynamic character and toughened by a special process whether it is or not. It is rather to be feared then that this word dynamic has been relegated to a low estate. Notwithstanding the apparent tendency to class everything by way of steel that finds its way into cars as the very best obtainable, the fact remains that some of the material is truly good, and when it comes to the material for springs, which is the affair of the hour, kinetic qualities are those desired, if the life of the springs shall be long, provided the easy riding qualities are present in the spring suspension. This must be so, since, as before stated, easy riding qualities are present if the steel is subjected to a fiber strain not far from the elastic limit, and so it follows that steel flexed repeatedly and continuously, under conditions nearly approaching the elastic limit, will not last long unless it is of a character extremely kinetic.

Physical Properties of Steel

The exact physical properties of the several grades of steel will be accorded a due measure of attention in connection with the part of this article specifically dealing with materials. For the present it will be well to consider one or two other points. For instance, a laminated spring of the flat plate variety must be so designed that each one of the leaves, regardless of its length, will be subjected to exactly the same fiber strain as its neighbor for the respective conditions of camber. This is rarely absolutely true, and the conditions here imposed are oftentimes violated, proof of which lies in the fact that plates will break out of the middle of a spring and the spring will work better without the broken plate than it ever did before. This merely illustrates the fact that the broken





A SECURE SPRING CLIP

plate was doing nearly all the work and served for the most part as a mischief maker, merely because the broken plate was given a greater initial camber than the occasion demanded. Mathematically and in practice, if the spring plates are all of the same thickness they should all be bowed to the same radius, and if they are so bowed the fiber strain will be the same in all for every condition of camber to which they are all treated.

It is easy enough in practice to fix the initial camber for the various lengths of plates, if they are all of the same thickness, since they can all pass through the same bending roll, if they are all to be of the same radius. This is not to say that the best springs will come from the practice of making all of the leaves the one thickness, since it would be possible to get more work out of the springs were the leaves decreasing in thickness as they shorten. With decreasing thickness of leaves we may have increasing camber as they shorten, hence increasing pressure and greater work. It may not be generally understood, and it may be well to point out, that the efficiency of a spring is measured by its ability to transform energy. This was intimated in the entering chapter, but we can go a little farther and say that the spring action is even at the expense of the power of the motor, and the more power the springs will absorb the easier will be the riding qualities of the springs. What is wanted in a spring is the ability to destroy the energy of the moving mass insofar as it can, by way of defeating easy riding qualities. We do not wish to have this energy destroyed instantly, but rather at an increasing rate for each increment of travel. we accomplish this more perfectly if the spring plates are made thin as they are made short, and if the pressure is increased as the leaves shorten, which is simply a matter of increasing the camber, as the leaves shorten. It is feasible to increase this camber, considering a fixed fiber strain, if the leaves are not all of the

same thickness. This can be readily done.

Limitations of Different Types

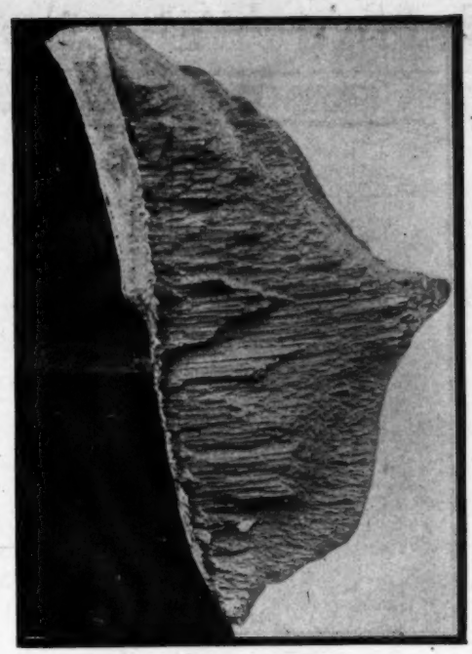
There is no actual limit to any type of spring, from the mere point of view incidental to indifferent service; if, however, easy riding qualities are desired, or, if spring failures are to be eliminated, it is then that limitations of the types will have to be considered. Take, for instance, the helical spring, placed in such a way as to take care of the vertical bounce of the body, and it is plain to be seen the spring may snub the load within the required limits of travel, but the pendulum action will be at a high periodicity. Obviously, it would be disagreeable riding under such conditions, because the number of oscillations of the body would be very high, indeed. It was found in practice that this very low-priced and practically unbreakable type of spring could not be utilized, because it engendered extremely disagreeable motions.

The concord type of spring—used extensively in connection with the little Oldsmobile—known in the far west as the buckboard type, is probably the most easy riding spring extant. It has always been used in connection with short wheelbase vehicles, and its limitation is that due to wheelbase. The successful application of this type of spring has nearly always been in connection with vehicles of a wheelbase not exceeding 72 inches, and now that motor cars, even of the runabout type, are designed with the wheelbase considerably exceeding 72 inches in nearly every case, this type of spring has been rendered nearly obsolete.

Adaptation of Spring Types

In the cars of the time it is a question of laminated plate springs, full, three-quarter, or half elliptical, as the exigencies of the service would seem to demand. Designers split on these differences, and some designers resort to the scroll as a further means of engendering easy riding qualities. The author has had occasion to observe road performance in motor cars in connection with racing cars and as this road performance relates to the more important types of touring cars. These observations have invariably resulted in the conclusion that full elliptical, rear, springs, with a scroll top section and rather stiff lower section, would more nearly afford a level platform than might be obtained in any other way. Next to the full elliptical, top scroll, rear spring, it is possible that the three-quarter elliptical, scroll quarter, would afford more nearly the perfection desired. Unfortunately, these types of springs do not readily lend themselves to the design of cars, if a low center of gravity is sought, and certainly a low center of gravity is of the utmost importance. Very ingenious designers seem to be able to cope with this problem, and we have a few examples falling within the zone, as above outlined.

It is not absolutely necessary to resort



SPRING LEAF FRACTURE IN KRUPP STEEL, SHOWING LONG FIBER

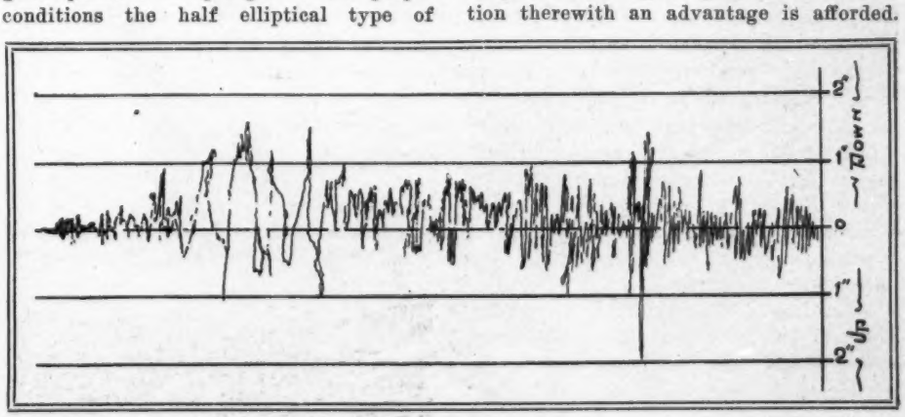
to the use of full or three-quarter elliptical rear springs, because the application of skill will render it possible to obtain easy riding qualities with the half elliptical springs in the rear in connection with cars with a low center of gravity and devoid of other much top hamper. The question of where the weight is placed is quite as important as the result of the center of gravity. For instance, in limousine the resolved center of gravity can be low enough to escape criticism; even so, a considerable proportion of the weight can be concentrated high above the base line, and that proportion of the weight will be in evidence, by way of excessive heel when the car is doing a curve. Flywheels, for instance, have their weights concentrated at the rims, because the flywheel effect is the maximum under such conditions, but the center of gravity of a flywheel, if it is kinetically balanced, will be at the axis of rotation.

The spring performance will only be up to the springs as a matter of design, if the design of the car as a whole will render it possible to take advantage of the good qualities of springs. Under proper conditions the half elliptical type of spring will afford easy riding qualities, and a periodicity of the oscillations said to be agreeable by even the most fastidious. A modification of the half elliptical spring is that known as the platform type of spring, in which, in addition to the two half elliptical springs in the fore and aft plane, a third half elliptical member is placed in a lateral position, suspended from the after end of the two half elliptical members above referred to.

Platform Springs Easy Riding

If top hamper causes lateral heeling in connection with the half elliptical springs, except in an ordinary way, this disagreeable property is far more noticeable in connection with the platform type of springs. The body is suspended to the lateral member of the platform members, and the spring action is therefore that which would engender lateral rolling if very much of the total weight is above the chassis frame. On the other hand, platform springs when properly designed and suitably placed, afford the very easy riding so much to be desired in connection with the road performance of cars.

Up to the present time we have made no mention of the spring suspension at the front end of cars. At the front end the problem is different, because there the load is almost constant. If the motor is placed in the front the load will be scarcely varied at all, due to the presence or not of another person besides the chauffeur in the remaining front seat. With the motor in front the chauffeur's position is so far back in the direction of the rear spring suspension that the difference of one person but little affects the weight actually resting upon the front springs. In front, then, it is very possible to take advantage of the half elliptical type of springs, since they lend themselves perfectly in every case, if only the weight is constant and the springs are designed taking that weight into account. In a very few cases the three-quarter elliptical springs have been used in front, and, while there is no great objection to the use of this type of spring under the conditions involving a constant load, there is a probable increase in cost to take into account, and an expenditure can scarcely be justified in anything unless in connection therewith an advantage is afforded.



BUMPOMETER TEST RECORD ON SPRINGS

MOTOR CAR DEVELOPMENT

ONE of the many medium-priced cars for this season, which shows a line of workmanship equal to that employed in higher-priced models of the same make, is the Cadillac 30, manufactured by the Cadillac Motor Car Co., Detroit, Mich. In this model the company uses its four-cylinder motor with copper waterjackets, upon which it has staked its all from the earliest days of the single-cylinder Cadillac. Chrome nickel steel is used in the gears and shafts of the selective transmission set; the rear axle is a combination construction, the frame is dropped in front of the rear axle, a platform spring suspension is employed in the rear, the motor is suspended at three points, an oil system without exterior leads is employed, annular ball-bearings are used in a great many places, and in fact the car is in many respects an improvement and refinement from previous higher-priced four-cylinder Cadillacs. This medium-priced car is built in five-passenger, demi-tonneau and roadster styles.

The motor with cylinders of 4-inch bore and 4½-inch stroke has an A. L. A. M. rating of 25.6, but the company claims 30 horsepower on a dynamometer. The cylinders are given a grinding finish, as are the piston and piston rings. Much attention is paid to the fact that because of the use of copper waterjackets it is possible to rough off the outer cylinder faces so as to obtain a cylinder wall of uniform thickness, which should result, with a homogeneous casting, in a uniform expansion and consequently uniform compression within the cylinders. This work is farther facilitated in that the cylinder heads and valve chamber comprise a separate casting.

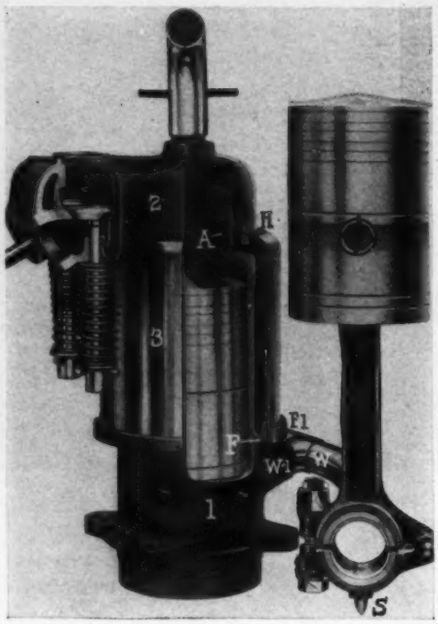


FIG. 1—CADILLAC CYLINDER CONSTRUCTION

Cadillac's Structural Features

Structurally considered, the Cadillac cylinder is a unit comprised essentially of three parts, a cylinder casting 1, a head and valve chamber casting 2 and waterjacket 3. The wall and head parts, 1 and 2, unite by a right and left threading in conjunction with ring nut A, which binds them both together and incidentally clamps the waterjacket top at H between them. The lower end of the waterjacket rests upon a flange F on the cylinder, and is held thereto by a ring F1 tightly clamping it in place. The water connection W, instead of entering the side of the jacket, which would necessitate a perforation of the copper part, connects with an expansion W1 on the side of the cylinder beneath the jacket space, and which has a connecting orifice in the flange F with the waterjacket space. This leaves an entirely circular copper jacket for each cylinder. The water circulation is maintained by a gear pump on the left front of the motor, the driving gear being enclosed in the forward compartment of the motor and the pump shaft extended rearward to drive the double-acting plunger oil pump. The intake pipe H for the water is a compilation comprising T pieces on three of the cylinders and an elbow on the fourth, with hose length H forming the connection between these pieces as well as between the front cylinder and the water pump. In the return flow a similar line of T pieces and one elbow with hose connections are used. The radiator is a copper construction consisting of vertical tubes, assisted in its cooling mission by horizontal copper baffle plates through which the tubes pass. Additional cooling is furnished by belt-driven fan mounted on ball-bearings. The interchangeable intake and exhaust valves are carried side by side in the valve compartments and are copiously waterjacketed. This illustration also shows the piston and connecting rod construction, the latter of the hinged-end type, with split bearings, which bearings, like those for the five of the crankshaft, are babbitt carried on a bronze backing and made adjustable. The crankshaft is offset ½ inch. Cams on the camshaft are separate hardened steel members, and the crankcase is made in the usual two-part construction with a comfortable housing for the five gears at its forward end—the crankshaft pinion, the camshaft gear, together with a bevel on it for driving the timer, and a large idler between the crankshaft pinion and the pinion driving the water pump and oil pump.

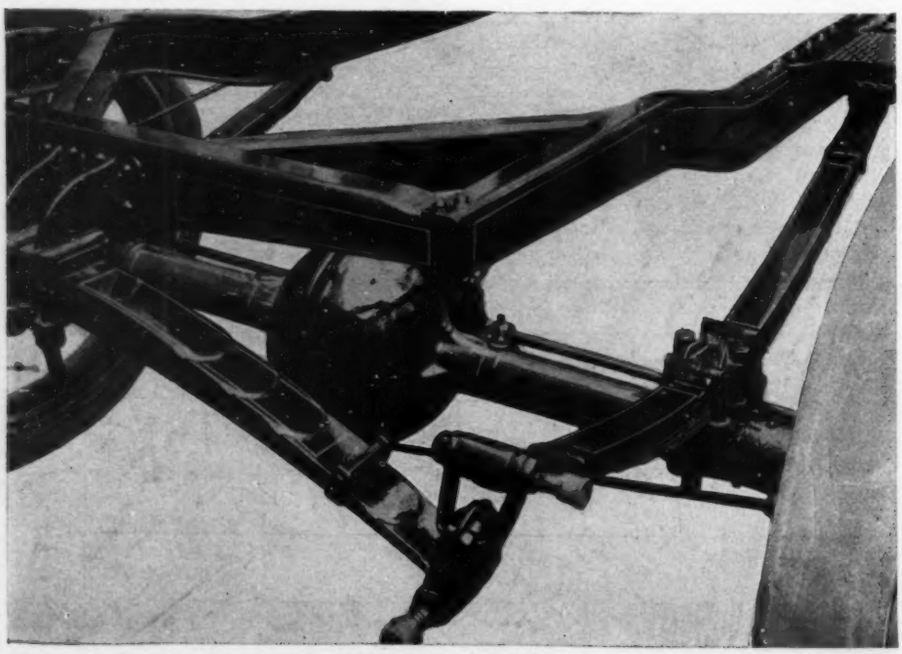


FIG. 2—CADILLAC REAR AXLE AND SPRING DESIGN

Lubrication of Motor

The lubrication of this motor is conspicuous by the entire absence of leads to the cylinders, the only visible outside lead being one from the plunger pump to the crankcase, and designated OL in the illustration. Although there is such a marked absence of leads the lubricating system is not the crankcase contained one with which it is generally associated in the absence of external oil pipes; instead, in the oil reservoir OR, a supply of oil is carried and there is a double-acting force pump, whose output can be regulated according

CADILLAC THIRTY FOR 1909

to the motor demands. The supply from this pump is forced from the reservoir OR through sight feeds on the dash, whence it flows to maintain the desired level within the crankcase, the lower half of the crankcase having dividing walls forming separate oil compartments for each cylinder. The splash for the cylinder walls and pistons is accentuated by the presence of splashers S, Fig. 1, on the lower ends of the connecting rods, which at the lowest point of each revolution dip into the oil. To avoid an oversupply of oil in many of the crankcase compartments, sloping troughs are furnished on the sides of the crankcase, which tend to maintain a uniform level.

The ignition system includes dry cells and storage battery as current producers, the current passing through a four-unit coil carried on the dash. Magnetos are not standard equipment. A Cadillac carbureter is used.

Uses Cone Clutch

The clutch is of the cone type, leather-faced, the ring it seats in is split into eight parts, with each of these acting as a separate spring to ease engagement. Between the clutch and gearbox is a combination universal joint. The transmission system is in brief a selective gearset and enclosed propellershaft with a floating rear axle. The gearbox, a one-piece casting, is suspended beneath two cross-members of the frame, thus providing for its removal without taking off the body. In it the main and countershafts are side by side, the mainshaft carrying two sets of sliding gears and affording direct drive by opposing clutch teeth, one set on the front sliding member, the other on the pinion on the short shaft on the front gear of the set.

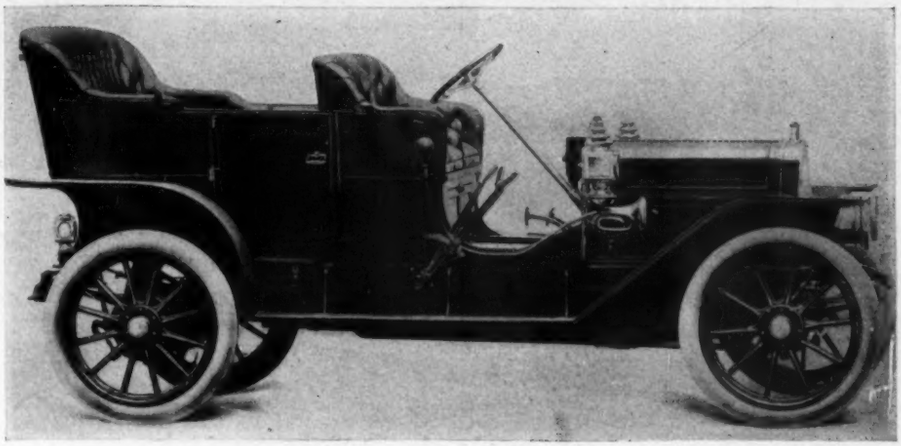


FIG. 3—CADILLAC MODEL 30 TOURING CAR

All of the speed-changing mechanisms are enclosed, the shifter rod being entirely encased and the drop arm on the chain speed lever sleeve being housed in a special compartment at the right. Both shafts of the set are carried on annular ball-bearings. Immediately in the rear of the gearbox is the one universal joint of the propellershaft which joint operates in an oil bath, formed by the enlarged end of the tube housing the propeller shaft and the support for this enlargement on the end of the gearbox. The propeller shaft is carried on two races of annular ball-bearings. The rear axle has a four-part housing, two cast steel bell-shaped pieces for enclosing the differential gears and into which are secured the cold-drawn steel axle tubings. Spring shackles are revolubly mounted on the axle tubing. The driveshafts of the axle are tapered at their outer ends where they attach to the rear wheels and are carried at this point on Hyatt roller-bearings and at the inner ends on ball-bearings. No provision is made for transferring the rear axle drive to the frame other than through the tube enclosing the propeller shaft.

In conjunction with the motor are the two set brakes, internal and external members acting on the same rear wheel drum. Both sets are applied through equalizers. The hand brakes, which are the externals, operate through a long equalizer E, Fig. 5, shown in the plan view of the chassis, whereas the internal brakes controlled by the pedals, are applied through a short equalizer E1. The connection from the brake lever and brake pedal to these equalizers is through side rod connections R and R1, which connect respectively with a rod

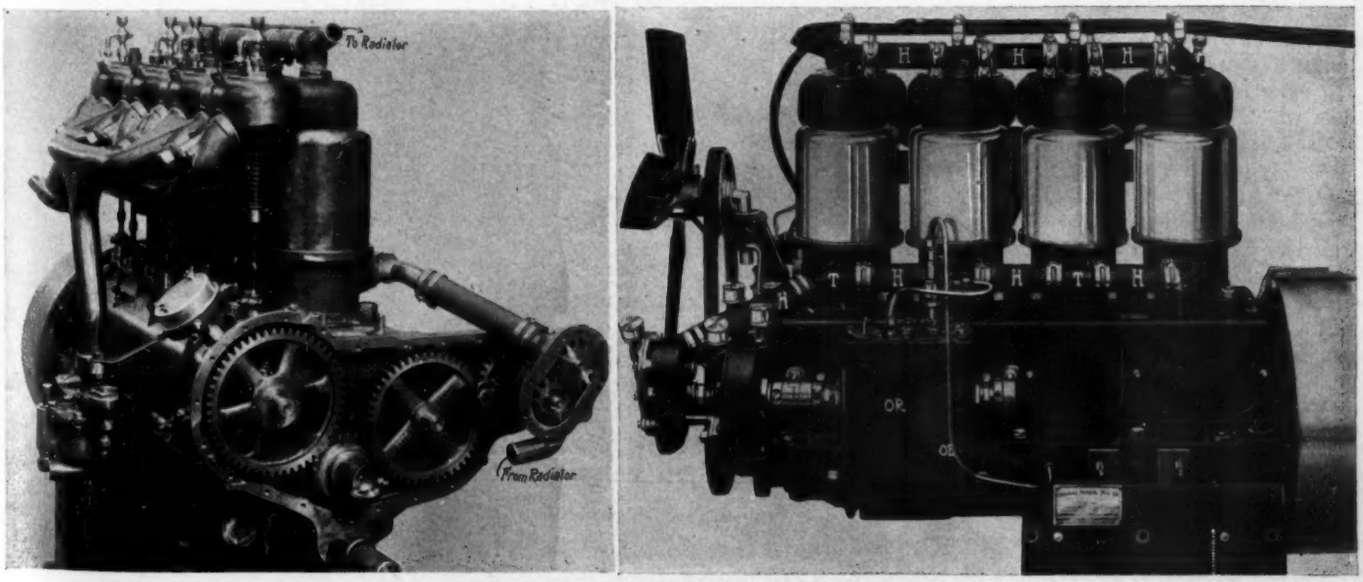


FIG. 4—CADILLAC ENCLOSED MOTOR GEARS AND HOSE IN WATER SYSTEM

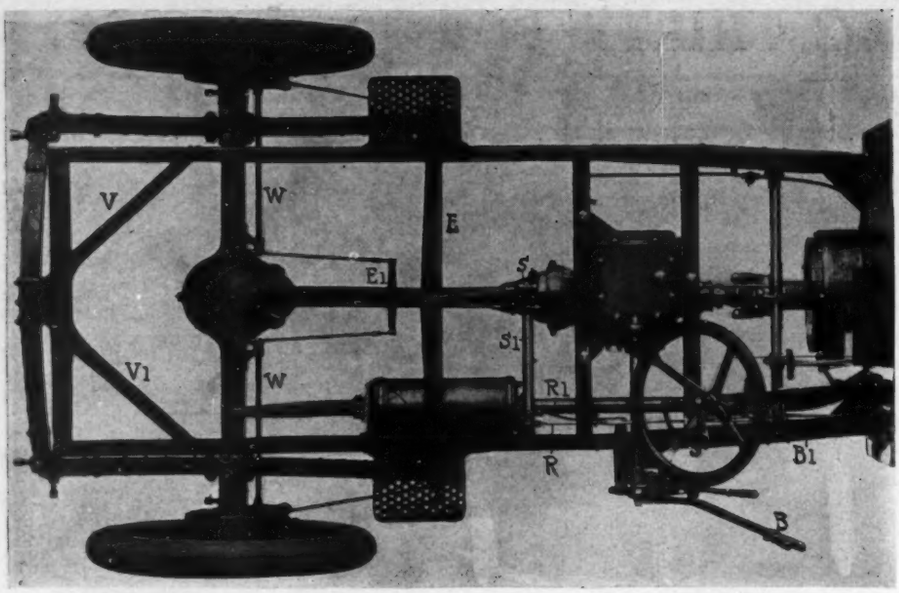


FIG. 5—CADILLAC BRAKE EQUALIZERS AND CONNECTIONS

S surrounded by a sleeve S1; these in turn uniting by short adjustable connections to the equalizers E and E1. The internal brakes have their final connection from the equalizer E1 through shaftings W, which parallel the axle tubings in front and are supported thereon by brackets at either side of the differential housing. The emergency, or hand brakes, when applied disengage the clutch.

Worm-and-Sector Steering Gear

In the running gear of foremost attention is the worm-and-sector steering gear, illustrated on next page, and in which the sector X has the central teeth of greater pitch radius, because of these teeth having to take the majority of the usage. Above the worm W is an end thrust bearing T and beneath it, at the location T1, is another similar bearing, the top one to take the thrust caused when the worm W tends to rise because of the turning force of the front wheel and the bottom one when the worm tends to lower. Making the steering housing a two-part casting, as illustrated, permits of comparatively easy access to these parts. The tie-rod between the steering knuckles is in front of the axle which is a cold-drawn seamless steel tube piece having forged ends electrically welded in place. The frame work, without the conventional subframe, is comprised of two side members, separated 33 inches at the rear, narrowed to 30 alongside of the motor to increase the turning angle, and dropped in front of the rear axle to lower the carriage of the car and give ample flexion range for the rear platform spring. At this point, doubtless because of attaching the transverse part of the platform spring to the cross member, are long angular braces V and VI, which unite with the cross-member of the frame where the spring brackets attach. The other cross-members of the frame are limited to the radiator support, the dropped piece on which the front end of the crankcase is carried, the rear motor supports and the two members carrying the transmission. Each front wheel is carried on two races of ball-bearings.

How Car Is Controlled

Control of the car is through two side levers, the two pedals together with an accelerator for the carbureter, and throttle and spark controls on the steering column. The touring car body is a straight-line construction with harmonizing fenders, the forward one being flat on top and an inclined part; whereas, the rear fenders have a flat top and curved front. In the three-passenger roadster the dash is heavily hooded. The change speed and brake levers are opposite the end of the footboard instead of behind it, as in the five-passenger touring style. The rear fenders follow the wheel curvature throughout their length and the front fenders follow the wheel curvature on top. The radiator sets well back on the axle line. These same constructions rule in the toy tonneau, or demi-tonneau, as the company has labeled it. All styles are fitted with 106-inch wheelbase and carry 32 by 3½-inch tires.

THE QUALITY MAINTAINED

Coincident with the present cut in tire prices comes the criticism from many parts of the country that the quality of the different tires will doubtless be impaired, but it is gratifying to know that the tire makers are meeting this criticism effectually, and also there is not in any wise any diminution in the quality of tires. The Hartford Rubber Works, Hartford, Conn., claims to be giving good tire value and in its 3½-inch tire always uses five-ply 17½-ounce sea island fabric, and is not simply using the five-ply in tires of this size intended for taxicab work, instead of reducing the weight or quality of its '09 goods. The company is improving the quality of the tread stock by making it tougher.

The Diamond Rubber Co., Akron, O., in its '09 tires, while making a 15 per cent reduction in its wrapped treads, has made not a few improvements and includes its quick detachable type of tire in the same listing as its regular clincher. The company is establishing claims on the balanced factor in its tire, by which is meant attention has been given to the tread in order to increase its wearing properties, and making its life more commensurate with that of the other parts of the tire.

The Goodyear Tire and Rubber Co., Akron, O., announce that in spite of price reduction it has made absolutely no change in the construction of its tires or rims for 1909, and continues its quick detachable rim, which is now entering on its third season, without a change of any kind. The inner tubes used are made from para rubber, alloyed with just enough toughening matter to meet the requirements.

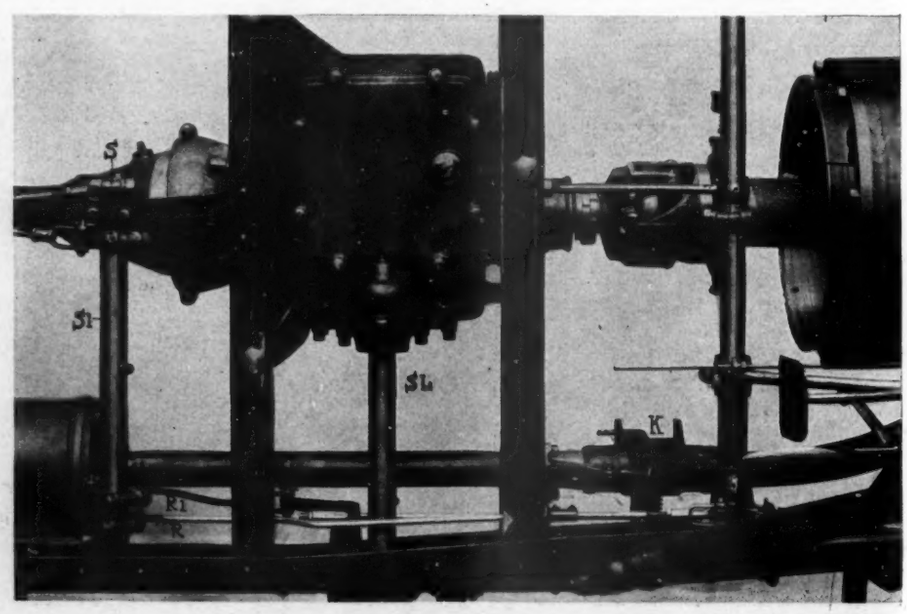


FIG. 6—CADILLAC GEARSET HUNG FROM FRAME CROSSPIECES

CARBON ON SOOT-PROOF PLUGS

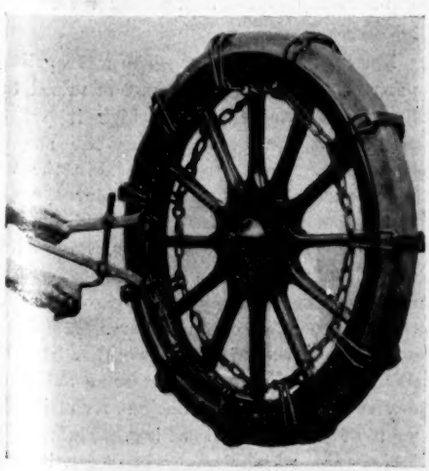
The Michelin Tire Co., Milltown, N. J., is making absolutely no change in the quality or construction of its tires for next year in spite of the price reduction.

MEZGER SOOT-PROOF PLUG

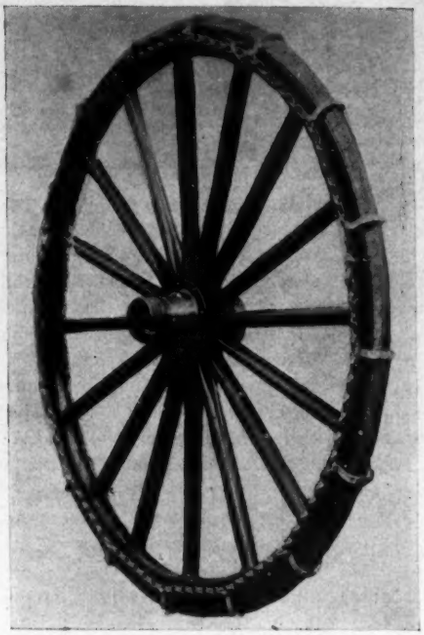
C. A. Mezger, New York City, manufacturer of the Soot-Proof plug, secured an interesting photograph, which is reproduced herewith, showing the four spark plugs taken from the Chalmers-Detroit car in the Jericho sweepstakes, October 10, on the motor parkway course, Long Island. The illustration is intended to show that, in spite of the amount of carbon collected on the ends of the plugs, none of them was out of commission. The exceptional amount of carbon was undoubtedly due to the great amount of oil fed to the car during the contest.

TIRE MUD HOOK

The Garage Equipment Co., of Milwaukee, Wis., manufactures an ingenious type of mud hook for attachment on the tires of motor cars to prevent slippings in muddy roads or deep sand. Each hook is a malleable iron piece which may be attached to the tire by a pair of straps passing around the wheel rim. It is held in position on the tire tread by the hook being formed with a seating curved to correspond with the tire tread. Each hook is separately attached to the rim and any number desired may be used. These hooks



PERFECTION SOLID TIRE NON-SKID



PERFECTION MOTOR BUGGY NON-SKID

may be used in conjunction with chains or may be fitted separately. They are manufactured in sizes to fit tires ranging from 3½ to 5 inches in diameter.

SOLID TIRE NON-SKID

The Perfection Non-Skid Clincher Co., Edon, O., makes a specialty of manufacturing non-skid tire devices for commercial vehicles, motor buggies, electric vehicles, and all machines using solid rubber tires. This device, as illustrated, for motor buggies consists of a heavy cross shoe fitted over the tread of the tire and made from hard steel. These coarse shoes are placed between adjacent spokes and are connected at their ends to Swede iron chains by steel side wires. By rounding all edges on the cross shoes the danger of injuring the tire is greatly elminated. These are made for wheels ranging in size from 34 to 48 inches. The styles manufactured for the small sized wheels, ranging from 28 to 36 inches in diameter, vary somewhat in construction from those used for motor buggies. In these the shoes for the tire tread are short and made from drop forged steel. The side of the shoe next to the tire is perfectly smooth, and that contacting with the ground surface made rough.

MOTOR CAR LITERATURE

Attractively illustrated, the catalog on multiple drills, issued by the Pratt & Whitney Co., of Hartford, Conn., is something worthy of perusal. The booklet is 12 by 9 inches, with a neat chocolate brown cover and contains twenty-eight pages, alternating a page picture and a page of reading matter. The different varieties of multiple spindle drills made by the concern are described, not the least interesting being an adjustable drill that is motor-driven. One of the drills is a giant that is made only to order, and which is designed for drilling valve and

GARAGE EQUIPMENT MUD HOOK

cylinder flanges up to 36 inches in diameter.

The November 1 issue of the Co-Operator, the semi-monthly house organ of the Maxwell company, is as usual an interesting number. It tells of recent feats of Maxwell cars, has an article by Charles T. Terry on the "Peresent Status of Motor Vehicle Laws;" "Little Lectures on Motoring," by Ernest Coler; and many items concerning the doings of Maxwell representatives.

Evidently from the pen of E. Le Roy Pelletier, "The Hyphen," issued by the Everitt-Metzger-Flanders Co., of Detroit, is devoted to a twenty-page interview with General Manager Walter E. Flanders in which are discussed the fine points of the E-M-F which is handled in an agreeable manner, each point being well argued and well brought out.

The latest issue of the Rambler magazine is a dealer's number and in it the 1909 models are illustrated and described so fully that the Rambler representatives throughout the country are furnished with almost as much ammunition as if they had made personal visits to the factory. The Rambler parts system is described, and so is the branch organization, and in addition there are helpful hints which should prove of value to the agent. In all there are sixty-four pages and it would be hard to find a dull spot on any one of them.

CADILLAC STEERING GEAR

FROM the FOUR WINDS

New Show Sign—For the coming A. L. A. M. show a new exhibitor's sign has been devised. It will consist of an ornamental lamp-post to be placed at each exhibitor's space, the exhibitor's name appearing on the glass panels of the lamp. This lamp-post will not be of the common, or curb-stone variety, and will have no cross arms at the upper end, such as were once used for lynching parties, but it will be of a modified type with the ornamental idea most prominent.

Denver Post Signs—The sign board committee of the Denver Motor Club has completed the work of placing road signs conspicuously and plentifully along the best road between Denver and Colorado Springs. This is only the beginning of an elaborate work by the club throughout the state. The road committee is also engaged in surveying and marking the distances and erecting signs at cross roads on all important highways out of Denver.

Denver Show Plans—It is more than likely that the 1909 Denver show will be held under the auspices of the Denver Motor Club, in the great municipal building, the Denver Auditorium, which has about 45,000 square feet of floor space. The date has not as yet been decided.

Meet for Denver—The Overland Motor and Jockey Club, under the management of G. A. Wahlgreen, is arranging for motor car and motor cycle speed contests on the mile track at Overland Park, this city, on Thanksgiving day. Twenty-five miles will be the longest motor car race.

New Road Scheme—A plan for keeping country roads free from stones, by organizing boys into road districts for the work, has been promoted by P. T. Colgrove, of Barry county, vice-president of the Michigan State Roads Association. Mr. Colgrove is at present trying his scheme in Barry county, but it will undoubtedly be adopted in other counties within the near future. The boys will meet at Hastings, Mich., and will elect their own officers and select their own methods of carrying on the work. It will be the duty of boys in certain districts to keep the highways free from stones and pebbles. They will receive their compensation from a fund which the promoters of the plan will raise by public subscription among the business men of Hastings. By impressing upon the boys the necessity of keeping roads in good condition it is thought a movement will be started which will result in a steadily growing interest in good roads.

Spangler in Denver—Robert W. Spangler, of Chicago, has been selected as secretary of the Denver Motor Club, assuming the duties of the office the first of the month.

Motor Club Reorganizes—The Camden Motor Club, of Camden, N. J.—formerly the Camden Automobile Association—has been reorganized with Dr. H. H. Grace, president; W. L. Hurley, vice-president, and George E. Rhedemeyer, Merchantville, N. J., secretary and treasurer.

Grade Crossings Going—The Consolidated railroad, which controls every land and water freight and passenger route emanating from Connecticut with one exception, will abolish two grade crossings, and in order to accomplish this the condemnation of private propertly will be necessary. In the town of Cromwell the company will change the grade so as to eliminate one of the two crossings now existing.

Minnesota Growing—President Frank M. Joyce, of the State Automobile Association of Minnesota, has organized thirteen new clubs throughout the state in the past year, making a total of seventeen, with a total membership of about 1,800. There are several other towns and cities where conditions are ripe for new clubs and Colonel Joyce thinks that by the first of the year there will be twenty lively organizations at least in the state.

Club Paper Growing—It is reported that the Automobile Club of Buffalo has decided on January 1 to enlarge its present motor bulletin to a magazine entitled the Buffalo Motorist. The club is deeply interested in the proposed boulevard between Buffalo and Niagara Falls. The proceeds of the publication will be devoted to defraying the expenses of the boulevard.

Club for Atlanta—After a half dozen futile attempts to form an organization, the Atlanta Automobile Club has been launched with fine prospects of growing into a flourishing body. At a meeting held at the Piedmont Driving Club the following officers were named: Edward H. Inman, president; Charles H. Ryan, vice-president, and W. G. Humphrey, secretary and treasurer. Executive committee: Beaumont Davison, R. F. Maddox, J. D. Rhodes, Asa Candler, Jr., Frank S. Ellis and Reuben R. Arnold, Jr. The membership limit is to be 100, and already sixty-three members have been secured.

Steamer For Savannah—The Quaker City Motor Club has chartered the steamship Grecian to make the trip from Philadelphia to Savannah to take in the races there. The vessel will leave Philadelphia on Sunday, November 22. Dr. J. R. Overpeck is chairman of the excursion committee of the club.

One More For Federation—The latest addition to the clubs composing the Pennsylvania Motor Federation is the Northampton County Automobile Club, made up largely of wealthy motorists of Easton. Its officers are: Robert E. James, president; Dr. E. S. Rosenberry, vice-president; H. D. Maxwell, secretary, and C. J. Knowles, treasurer.

Too Much Water—At a recent meeting of the Automobile Club of Hartford a committee of four was appointed by the president to wait upon the street board and endeavor to persuade that body not to water the asphalt pavements during the business hours of the day, it being claimed that Hartford's streets are over-watered.

Wilkes-Barre's 1909 Climb—As Decoration day next year falls on Sunday, the officials of the Wilkes-Barre Automobile Club have decided to run off their 1909 hill-climb on Saturday, May 29. There is at present a division of opinion as to the advisability of making the climb an international affair or to continue it, as formerly, as a blue-ribbon event for American cars only. The club officials are of the opinion that as the event has now attained country-wide prominence, it would afford an excellent opportunity to pit the crack American models against the best hill-climbers foreign manufacturers can produce.

Relieves the Pressure—The metropolitan park commission of Boston has raised the bars a bit on the rule which it put in effect last March regarding the use of tires with chains, treads, etc., in the various parks near Boston. Under the old rule all sorts of metal anti-skid devices such as chains, studs, burrs, and wires were prohibited, the wearing effect of these on the roadway being excessive, according to the commissioners. Motorists complained that in wet weather it was dangerous to drive without some anti-skid device and the commission reconsidered part of its original ruling. Under the latest rule, which is now in effect, it will be permissible to drive cars equipped with armored treads, either studs or wires. The

commission does not admit that the studs do not injure the roads, but the members thought it advisable to give the motorists a bit more leeway. For violation of the rule there is provided a $20 fine.

Home for Scrantonites—The Scranton Automobile Club, of Scranton, Pa., is considering the advisability of building in the center of that thriving Pennsylvania city a clubhouse and garage especially fitted to its needs. The club's membership is rapidly growing, and there is a loud demand for a comfortable and well-fitted-up house for the club.

Would Revive Old Club—An effort is being made to reorganize the old Elmira Automobile Club, of Elmira, N. Y. The purpose of the proposed organization is to further the interests of motorists by affording them protection and appropriate legislation. Guy Shoemaker, an officer in the old club, is one of the principal promoters in arousing interest in the new association. The old club was formed 5 years ago and since that time interest in motoring has greatly increased in Elmira.

Helps at Election Time—Election day and voting machines created a new use for motor cars in Indiana last week. Under the law, the board of election commissioners were required to visit every voting precinct in Bartholomew county and set the voting machines, ready for use. Lynn Benefield, the Columbus agent for the Premier, found a way out of the difficulty by covering 125 miles over the county the day before the election, with the result that the commissioners got through with their work on schedule time.

Goggles Are Dutiable—A decision has been rendered by the board of general appraisers that goggles for motorists are dutiable under the provision in the tariff for "goggles," and not according to the component material of chief value. The question was raised by several New York importers of motor car supplies, who claimed that the duty should be based on either the aluminum or rubber of which the goggles were made. They objected to paying a duty of 50 per cent. The goods were invoiced as "auto goggles."

Helps the Horse—Ever since the motor car made its appearance a few years ago it has been regarded as the natural and unquestioned enemy of the horse, taking away the latter's occupation and often throwing it into a fright. That was the popular idea. It has remained for a 28-horsepower Franklin car to unsettle this belief and become the rescuer of the horse in distress. It was down in Marshall, Tex., that the tables were turned. A horse with time to spare in which to get into trouble managed to fall into a well. It was powerless to get out, and people nearby could provide no relief. Getting a horse out of a well presented a problem without precedent and it was not until someone thought of the motor car that any relief measures were possible. With the machine to provide the necessary pull, however, an arrangement was rigged whereby the animal was again put on its feet above ground.

After Careless Drivers—Superintendent of Police Regan, of Buffalo, is co-operating with members of the automobile club of that city in an effort to stop careless driving in the down-town sections of Buffalo. He insists that the rules of the road be observed. He says that the drivers of slow-moving vehicles must keep to the right and close to the curb. He also says that draymen shall not travel abreast and the drowsy driver who lets his team wander aimlessly all over the street will be prosecuted.

American Cars in Europe—Statistics throwing an interesting light on the cars used by Americans in touring abroad have been gathered by the George N. Pierce Co., of Buffalo. The statistics have been prepared from information furnished by express, freight forwarding and steamship companies and while they do not, perhaps, include every car shipped to Europe for touring purposes during the past 12 months it is believed they are broad enough to give a fairly accurate idea of the cars used by Americans in Europe and the proportion of American and foreign made cars used for that purpose. The reports received show that of the cars taken abroad in 1908 for touring purposes slightly over 75 per cent were of American manufacture, and less than 25 per cent were of European make. In 1905 these percentages would have been just the other way. The figures on the makes of cars used shows that of the entire number, both American and foreign, an even one-fourth were Pierce-Arrows. There is another phase of the matter on which, obviously, no percentage figures could be obtained. Formerly many owners who tour in Europe each year made a practice of keeping cars on both sides of the Atlantic, one, a European machine, they used for touring in Europe, and another, American, for use in this country. During the time they were in the United States the car in Europe would be stored there. Now, however, all this is changed. Fully three-fourths of the people who had adopted this custom, steamship and express officials say, have changed and now own but one car, generally of American make; and take this to Europe with them. What figures were obtainable show that the proportion of Pierce-Arrow owners among this class is even greater than the proportion of Pierce-Arrow owners among all American cars taken abroad. Officials of the company believe that this fact can be traced directly to the establishment of the depot of supplies at Paris.

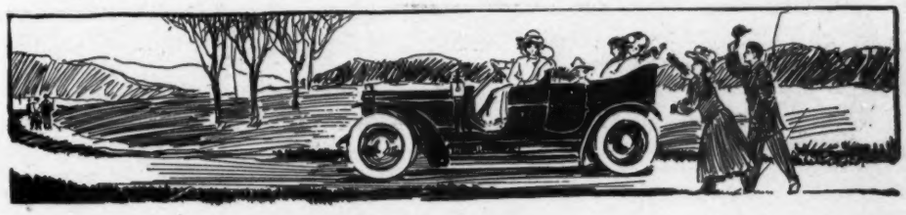
Bay State Director Resigns—At a recent meeting of the Bay State A. A. of Boston, Arthur P. Underhill resigned as one of the directors and J. S. Hathaway was elected to fill the vacant position. Mr. Underhill found the pressure of business too much to allow him time to look after club affairs.

Makes Long Climb—Seven miles farther up the slope of Mount Rainier than a motor car ever has pushed before, Louis Hemrich and Rudolph Samet, of Seattle, Wash., have driven their 28-horsepower Franklin. They set out from Seattle, climbed altogether to a height of 6,000 feet and were back at the starting point inside of 3 days.

Sawyer Succeeds Fortesque—Herbert M. Sawyer, of Worcester, has been appointed secretary of the Massachusetts State Association. At the last meeting every office but that of secretary was filled. Secretary James Fortesque, of the Bay State club, who formerly held the office, could have secured a reappointment but he refused and so the Worcester man was appointed.

Pierce In Swedish Test—That an American car is the one best fitted to win the great winter reliability tour held in Sweden each year is the opinion of Pantus Lindstrom, who is now in this country. Mr. Lindstrom, who is a mechanical engineer, is now negotiating for a six-cylinder 60-horsepower Pierce-Arrow with the intention of entering it in the run on his return home. If he carries out his intention the car will be the first one of American make that has ever been entered in this event. Mr. Lindstrom heretofore has used cars of French manufacture.

Quakers Make Plans—On January 1 and 2 the Quaker City Motor Club, of Philadelphia, will hold its third annual endurance run. Indications point to even a greater interest being taken this year than ever before on the strength of a new condition governing the prize—the McDonald & Campbell cup—which was formerly a perpetual trophy, but this year will become the permanent property of the winner. Following an exhaustive search for a clean score eliminating route and to avoid if possible the confusion of last year's run caused by numerous ties, the contest committee has decided on Philadelphia to Wilkesbarre and return. The official pathfinder will be a Pennsylvania.



The Realm of the Commercial Car

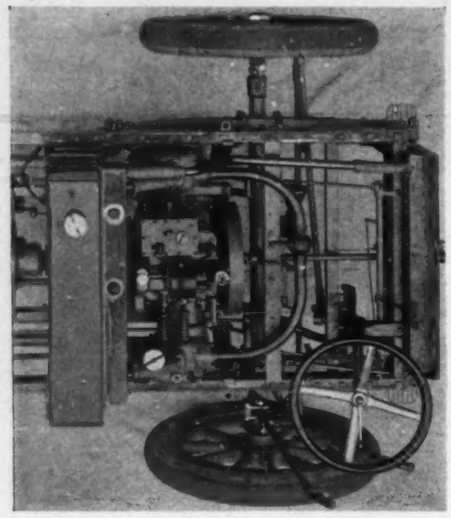


FIG. 1—AUTOCAR MOTOR LOCATION

The Autocar Vehicles

THE Autocar Co., Ardmore, Pa., has announced for next year its comprehensive line of commercial vehicles, which includes closed and open delivery wagons, light trucks, landaulet type of town cars, passenger buses and body styles suitable for practically any nature of work. The chassis are made in two sizes—one with an 85-inch wheelbase, and the other 97-inch, the former fitted with pneumatic tires—the other with solids. In these vehicles the motor used, rated at 18-horsepower, is of the two-cylinder opposed type, 4¾-inch bore, 4½-inch stroke, and is located transversely in front beneath the driver's seat, thereby resulting in a good conservation of the load-carrying space.

At first glance the motor appears to be not unlike that used in the two-cylinder Autocar runabout that has had such a favorable patronage for years, but a closer examination reveals how different it is. In the first place, intake and exhaust valves are both mechanically operated and rendered accessible by being located in integral valve compartments on the tops of the cylinders. These cylinders are, in the course of manufacture, bored, then annealed, after which they are given a final boring followed by being ground to size and lapped in by the piston and rings. The crankcase is split horizontally into halves, the lower half carrying the cylinders, crankshaft, water pump, and camshaft; and the upper the push-rods and guides, the magneto, the oiler, and the gear for driving the water pump. The top part is easily removable, carrying with it the parts mentioned, and when removed exposes the crankshaft and other working parts of the motor. Within the motor careful workmanship has been done. The pistons are grounded to size before the lapping operation and carry three 5-16-inch rims, all located above the piston pin, which pin is hardened and ground to size and held in place by a snub and spring, a method used on Autocars for several years. The connecting rods are heat-treated, high carbon steel forgings; the wristpin and crankpin bearings are of bronze, and the high-carbon steel crankshaft, with its ground bearings is mounted on Hess-Bright bearings and carries two flywheels, Fig. 4, the front one F, with fan-blade spokes which results in eliminating the radiator fan, and the rear one F1, in which is carried the triple-disk clutch. By means of the two flywheels, which are counterweighted to produce a moment opposed to the unbalanced moment of the pistons and connecting rods, the resulting balance of the motor is claimed to be nearly perfect.

In the ignition system the magneto M, which is standard equipment, is carried centrally on the top of the crankcase, being attached by two winged bolts and a top yoke Y over the permanent magnets. The magneto is of the low-tension type and its current is delivered through a coil mounted on the right side of the seat structure. In the long chassis the front flywheel F carries a throttle governor which limits the motor speed to 1,300 revolutions per minute. Lubrication is by forced feed oiler L carried over the cylinder and driven by wire belt L1 from the rear end of the camshaft. The oil flow passes through sight feeds and reaches the cylinders and crankcase in which a splash is maintained. A single winged bolt, together with dowel pins, holds the oiler in place and permits of ready removal, which is a most important fact in connection with commercial vehicles. The water pump is carried at the rear between the crankcase and the flywheel and is gear-driven, the gears being enclosed. The radiator, suspended from the front cross member of the frame under the dash, is well protected. A separate water tank is carried in the rear of the motor, as back of it is the gasoline tank.

FIG. 2—ACCESSIBILITY OF MOTOR

By mounting the motor together with the transmission on a pressed steel framework, to which the motor is attached by four bolts, 1, 2, 3, 4, passing through feet on the sides of the cylinders, and the transmission also by four bolts, a simple supporting scheme is accomplished. This is made additionally simple by having the front cross member of the subframe furnished with two up-bent arms R and R1, one on each side, by means of which the subframe is suspended from brackets on the side members of the main frame through two large pins. The rear transverse members of the subframe is a semi-circular steel casting K, at the top of which is a large stud R2, which attaches to a front member of the main frame by a nut. Because of this suspension of the power plant at three points, it can be easily

FIG. 3—OPEN BODY ON AUTOCAR CHASSIS

removed by disconnecting the inlet, exhaust and water pipes and two pins R and R1 and nut R2. This demountable power plant removes the necessity of a spare in the delivery system, making it only necessary to have an additional power plant which can be readily installed in case the other becomes deranged.

The clutch carried in the rear flywheel is of the three-disk type so long used in Autocars, consisting of a floating bronze disk with cork inserts, located between the two steel disks, mounted on the clutch shaft, which disks clamp the bronze rings between them in engagement. The bronze disk is mounted on four sliding keys on the inside of the flywheel rim and rotates with the flywheel. Clutch engagement is accomplished through a sliding trunnion ring, the trunnion being opened from the clutch pedalshaft through an auxiliary shaft to the yoke. The progressive type of sliding gearset is the same as used in the 28-horsepower car and is of that design in which the countershaft is carried beneath the mainshaft, both of them rotating on Timken bearings, which bearings are mounted in caps screwed in the end of the case. The case is a one-piece casting with the entire top a cover plate, through which the shaft and gears may be removed without removing the case from the subframe. An oil-filling plug with wing pieces is carried in the cover. On the right side of the box is a small opening for the adjustment of the gear shifter. From the gearbox trasmission is through a propellorshaft carrying two universal joints.

The rear axle, however, is most interesting in that it contains a double gear reduction. The rear univeral joint J attaches to the forward end of the shaft S, which is carried on two races of Timken bearings above the axle driveshaft A, so that the gear S1 is in rear of the axle. This gear is in mesh with a bevel B on

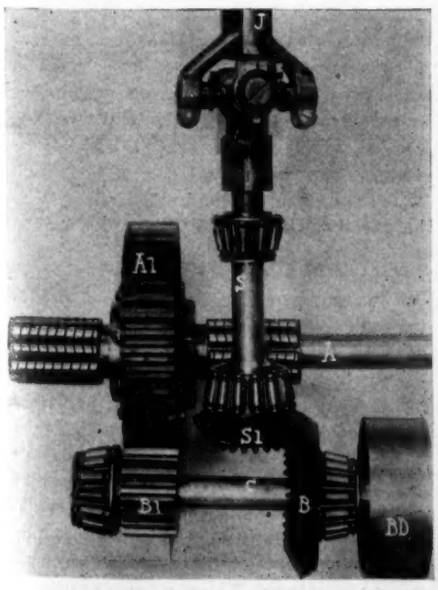


FIG 5—AUTOCAR REAR AXLE GEARING

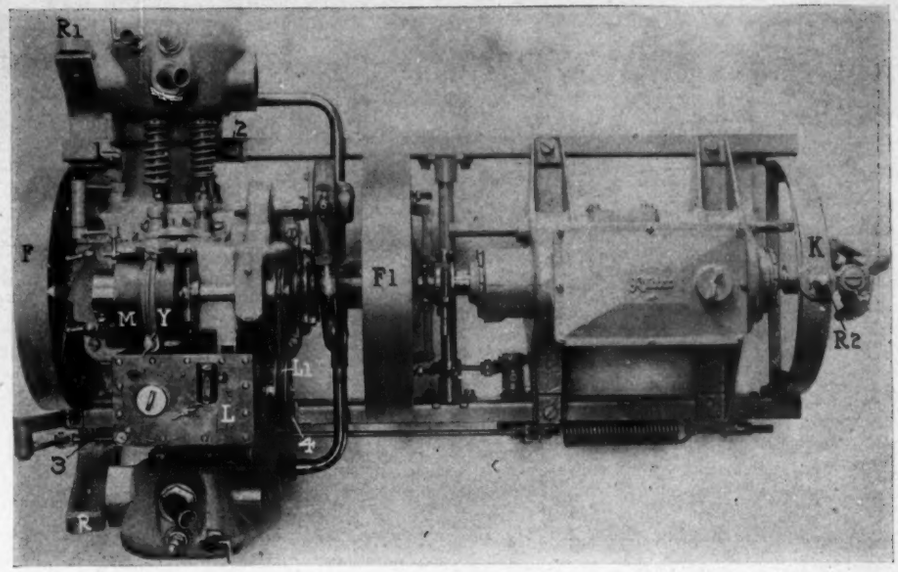


FIG. 4—AUTOCAR MOTOR AND GEARBOX ON DEMOUNTABLE FRAME

a countershaft C in rear of and parallel with the axle. This countershaft is carried on two races of Timken bearings and carries on its right end the brake drum BD. The spur pinion B1 meshes with a large spur A1, which encloses the differentials. The object of this double reduction is that a large gear ratio between the shaft S and the rear axle A, such as is needed for commercial work, can be obtained without the necessity of making the pinion S1 so small that the danger of stripping it becomes a factor. Still another advantage is that the same housing will contain gears offering a range of rear axle ratios from 3.71 to 1 to 5.57 to 1, which would not be possible where drive would be from the bevel S direct to a bevel on the differential which would take the place of the spur gear A1. The axle driveshafts A are heavy members squared at their inner ends where they fit into the differentials, and also at their outer ends where they drive the wheels. These shafts are carried on Hyatt roller bearings at the differential and Timken rollers at their outer ends. The axle housing, which contains this double-reduction gearing, as well as the driveshaft A, is made throughout from malleable steel and fashioned in five pieces. As shown in the chassis illustration, the portion H, carrying the countershaft C, is removable and all gears, with the exception of the spur A1, can be removed without taking the axle from the car. The housing portion for accommodating the differential is a two-part affair, copiously ribbed on the outside, to which bolts the axle tubes. Riveting and brazing has been avoided in this rear axle construction.

In the running gear the tubular front axle is a straight member provided with Elliott ends and having Timken bearings for the wheels. The tie-rod connecting the steering knuckles is in front of the axle, and both the spindle bolt bearings and steering link bearings are bushed with hardened steel. The steering gear is of the bevel gear and sector type, and spark and throttle control are above the steering wheel. A combination spring suspension is used comprising semi-elliptics in front and full elliptics in rear, the latter carried on seatings integral with the axle tubes. Driving strain is taken off the springs through the presence of strut rods extending from the axle ends to brackets on the side members of the frame, the presence of these rods obviating the use of the torsion rod paralleling the driveshaft. The frame is armored wood in combination with pressed steel members. In the short chassis with its 85-inch wheelbase, 32 by 4-inch Goodyear detachable rims with pneumatic tires are used, and on the long chassis with its 97-inch wheelbase, 32 by 3½-inch solid tires are made use of. The short wheelbase type will accommodate a body platform 48 inches wide and 68 to 90 inches long; whereas the long chassis allows for the same width

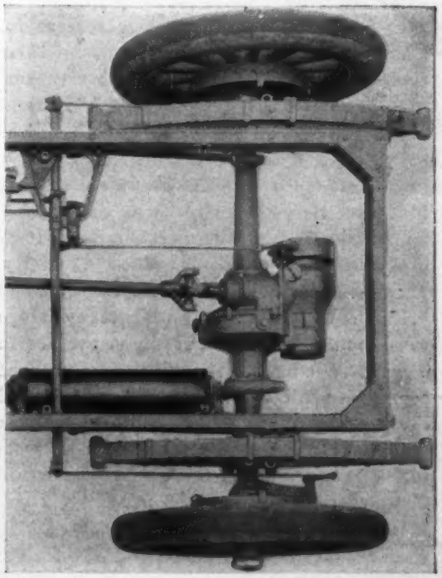


FIG. 6—AUTOCAR REAR AXLE HOUSING

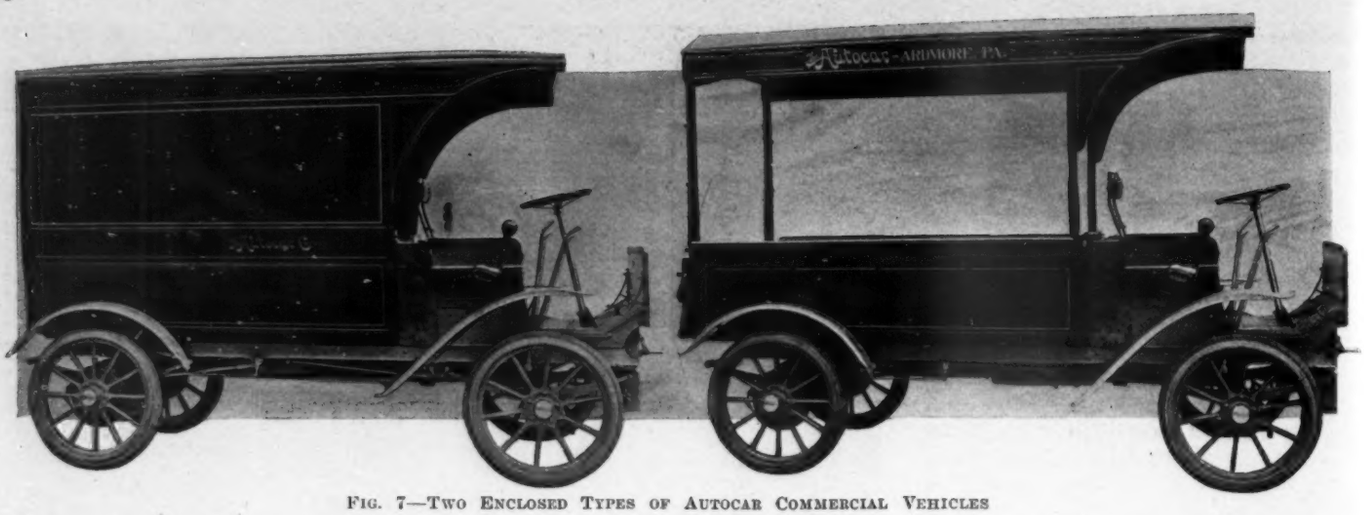


FIG. 7—TWO ENCLOSED TYPES OF AUTOCAR COMMERCIAL VEHICLES

and a length ranging from 80 to 100 inches.

The car control is conventional. One pedal controls the flywheel clutch, and the other the regular brakes on the rear wheel hubs. One side lever operates the gear-set, the other the single emergency brake on the countershaft in rear of the back axle.

MILWAUKEE MOTOR MAD

Although Milwaukee's city comptroller was averse to spending $3,600 for a motor car for the chief of police because the fire chief's car cost but $1,200, the common council unanimously decided to go one better and passed a resolution calling for a car to cost $4,600. The board of public works will now advertise for bids for a 40-horsepower car, either steam or gasoline. While the common council was at it, a number of aldermen got together and decided to ask for a committee car for use of the various committees of the common council. This would make six municipal motor cars for Milwaukee.

The request of the Milwaukee common council for a car for the use of its committees will no doubt be granted. If anything were needed to convince the powers that be of the value of the motor car for this purpose, the recent experience of three committees did it. Half of the city government went out in hired cars and transacted business that would have required 3 to 5 days if horse vehicles had been used, in less than 1 day. The greatest feat was that of the committee on annexation, which covered all of the territory it is proposed to incorporate into the city. Thirty-eight miles were made from 1:35 to 4:45 in the afternoon, and many stops were made. The same afternoon the health committee covered the city on the hunt for a site for an isolation hospital, and the committee on health's other division visited thirty-five rag shops widely scattered, between 2 and 5 o'clock. The actual distance covered was 24.8 miles.

In the annual budget of the city of Milwaukee, provision is made in the estimate for police department support, for a motor ambulance. The publication of the budget was the first news of this request. The department already has a $2,500 motor patrol truck and the chief has a $3,600 touring car.

Secretary Frank M. Harbach, of the Milwaukee board of school directors, who was granted an appropriation for a car for the board and himself, has chosen the Johnson, a Milwaukee-made car. It is to be a 30-horsepower four-cylinder combination roadster and touring car. This car is made by the Johnson Service Co., of Milwaukee, which recently entered the manufacturing field.

RACINE LIKES STEAMERS

The Horlick Malted Milk Co., of Racine, Wis., has purchased a 30-horsepower White steam motor truck for transportation of goods from warehouses to depots. The capacity is 2 tons. A. J. Horlick, president of the company and mayor of Racine, is well satisfied with the success of the truck and plans to add two or three more soon.

BUYS MOTOR CHEMICAL RIG

The town of Thompsonville, Conn., about 20 miles from Hartford, has purchased a two-cylinder Knox combination chemical and hose wagon for the use of the town fire brigade. The machine is of conventional Knox construction. The installation was marked by a celebration in which the entire populace participated.

MUNICIPAL GARAGE PLANNED

The city of Milwaukee may open a municipal garage, to care for the municipal-owned motor cars, which have been increasing to a respectable number this year. The latest applicant for a car is Mayor D. S. Rose, who says he is tired of paying money out of his own pocket for car hire to entertain guests, visiting executives and the like. Chief Clancy of the fire department has a touring car; Superintendent Carpenter of the park board has a runabout; Secretary Harbach of the board of education has been granted a machine; Chief Janssen of the police department is expecting his new car; the police patrol has a big patrol wagon, motor-driven, and the board of public works has been promised a touring car for next spring. Although there was never a municipal livery stable and although the cost of maintaining the motor cars is far less than in the days of the horse, it is believed that the city can save money by having a central garage for its cars.

WANTS MOTOR FIRE SERVICE

The city of Fond du Lac, Wis., may be the first municipality in the northwest to apply the motor to fire engines. A recent fire wiped out $250,000 worth of property and showed the city officials that its apparatus was inadequate. It was decided to buy a new engine, and when bidders offered a motor engine, showing incidentally its success in Los Angeles and other cities, the council thought it over and has now practically decided to buy a motor engine. The type most appealing to the councilmen is a 60-horsepower truck, with a capacity of 1,200 feet of hose, short ladders, driver and seven firemen, with a four-nozzle attachment. The initial cost, it is agreed, will be twice that of the common steam fire engine, but the aldermen believe, from facts at hand, that this will be balanced within 3 to 5 years.

PROFITABLE AS HUCKSTERS

Buying poultry and farm produce through the rural districts with motor trucks, instead of the old familiar horse-drawn huckster wagons, has not been an untried experiment in Indiana, but it has remained for the Jaques Packing Co. of Lafayette to attempt it on an extensive scale. Recently the company bought five 1½-ton Rapid gasoline trucks from the Indianapolis Motor Car Co. and these have been doing very good service at an actual saving of money. The company has branch houses at Lebanon, Goodland, Ladoga and

Thorntown, although these houses are conducted under the different firm names. The trucks are used in going through the country and buying butter, eggs, poultry, etc., from farmers. Incidentally they are used in competition with interurban freight lines in hauling from small towns to the branch houses. E. E. Bogan & Co., operating the branch house at Goodland, have submitted the following record for 1 month's work:

Distance traveled, 716 miles.

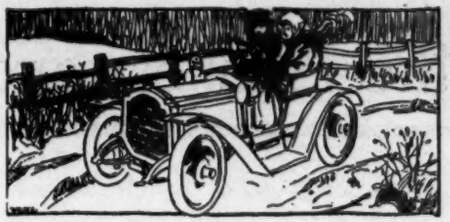
Amount hauled—	Cost of hauling at freight rates	
310 empty coops	$ 15.81	
84 empty cases	1.14	
5 butter tubs	.25	
34,941 pounds poultry	118.96	
222 cases eggs	15.30	
1,406 pounds butter	1.82	
10,006 pounds miscellaneous articles, such as rags, rubber, empty barrels	13.00	
Total		$166.28
Expense of operating truck—		
145 gallons of gasoline	$ 15.90	
30 gallons oil	9.30	
2 spark plugs	1.70	
2 batteries recharged	1.00	
		27.90
Net profit		$138.38

RIG FOR HOOSIER POLICE

The Indianapolis Motor Car Co. has received an order for a Rapid patrol wagon, making the second gasoline patrol to be purchased by the Indianapolis police department. The new wagon will not be received until January 1, when the appropriation for its purchase becomes available. With the new car the police department will discard all of its horses as it already has a White steamer touring car for emergency runs and an Autocar runabout for inspection work.

CAR FOR FIRE CHIEF

The chief of the Oshkosh, Wis., fire department, R. A. Brauer, will ride in state hereafter. The Oshkosh common council is favorably disposed toward the purchase of a motor car for his use. Rather than spend $600 to replace the present horse and buggy outfit, the aldermen will add a similar amount or more and buy a car. This will be the first municipal car in Wisconsin, outside of Milwaukee. The opinion



expressed by Chief Thomas A. Clancy, of the Milwaukee fire department, who has been using a car with brilliant success for more than a year, influenced the Oshkosh action. Bids will be called for soon. The car will be equipped with a battery of chemical extinguishers and seats for two firemen besides chief and driver. It is figured that there will be a saving of from 5 to 10 minutes' times in reaching fires over the antiquated method of locomotion, viz.: the horse.

IN THE MILK SERVICE

The Polk Sanitary Milk Co., of Indianapolis, the largest concern of its kind in that city, has purchased a Rapid truck to be used in gathering milk from farmers between that city and Greenwood, a distance of 12 miles. Heretofore the company has depended on an electric interurban freight car which has not delivered milk into Indianapolis until afternoon, owing to the great amount of business along the road. In a series of demonstrations conducted by the Indianapolis Motor Car Co., which sold the truck, the big car made the trip in 2 hours 50 minutes, making eleven stops at farm houses along the route. It is said the company contemplates adding nine more motor trucks in the spring if the present one continues to give satisfaction.

SERVICE FOR THE CAPITOL

Pursuant to an act of Congress the Metropolitan Coach Co. is now preparing to substitute motor vehicles for the present horse-drawn herdics now used on Sixteenth street in Washington, D. C. These herdics have been an eye-sore for years and there is much rejoicing that they are to be supplanted by motor omnibuses. The Cook & Stoddard Co., Washington agent for the Franklin, has secured a trial order from the coach company for a Franklin fourteen-passenger omnibus. If it proves satisfactory an order for ten more will be placed. The omnibus will be delivered in about 9 weeks and will be given a very thorough test on Sixteenth street. It will be required to run 120 miles each day and to be in continuous service for 17½ hours out of the 24.

MILWAUKEE'S NEW SCHEME

The Milwaukee Y. W. C. A. is considering the advisability of purchasing a motor car to do away with the principal difficulty in operating a good employment agency, viz., safe delivery of applicants to situations. On first glance the expense would seem abnormal, say the women, but the plan will show profits within a short time, they believe. One of the evils to be guarded against is the possible desire of some applicants for a free ride in the car. This danger is a small one and will easily be overcome.

RAILROAD TO USE CARS

The Pennsylvania Railroad Co. proposes to install motor cars in Pittsburg in a very short time to expedite the handling of freight between stations. The company's experimental service in Philadelphia between the Kensington and Shockamaxon stations has been the direct cause of the recent decision with regard to Pittsburg service. It was found that the Philadelphia motor truck saved between 6 and 8 hours in the handling of package freight between the stations named. The truck has a capacity of 5 tons and is driven by a 6-horsepower electric motor. It averaged eight trips a day and carried a little over 2 tons per trip, which was about 8 miles. Pittsburg is peculiarly well-adapted for service of this kind owing to the great difficulty in switching here and the comparatively short distance by automobile route between the different Pennsylvania stations.

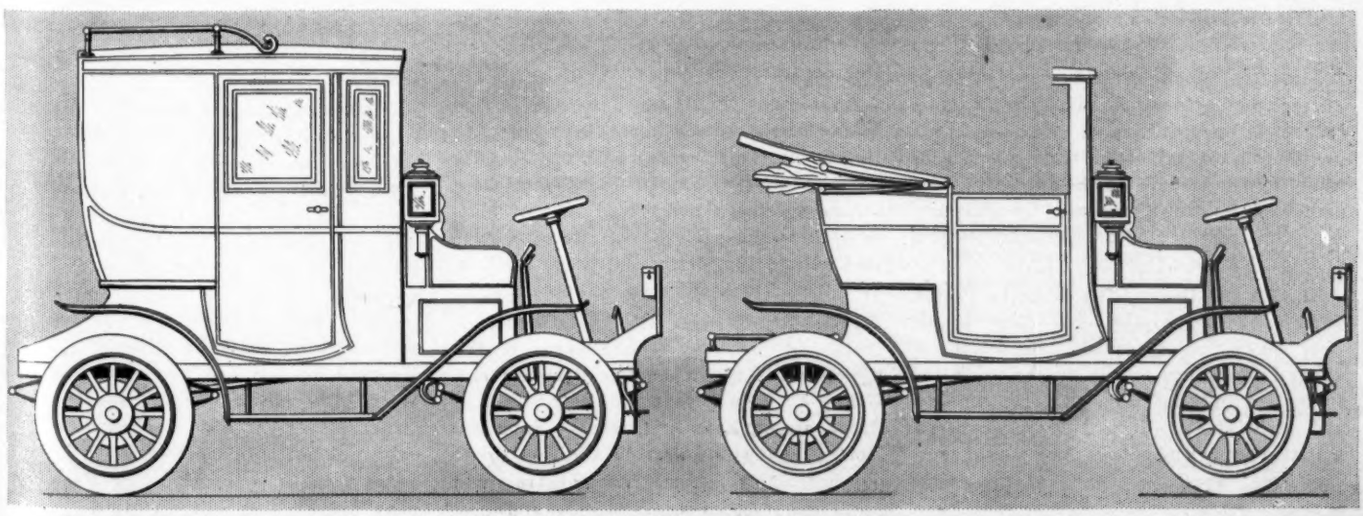


FIG. 8—AUTOCAR CHASSIS CARRYING COUPE AND LANDAULET TYPES FOR TOWN USE

Among the Makers and Dealers

Takes the Grout—The Stoyle Automobile Co., 1521 Spring street, Philadelphia, has closed for the Grout agency.

Adds the Regal—The Thomas M. Twining Co., 326 North Broad street, Philadelphia, the Crawford agent, has added the Regal to its line.

Opens in Boston—The Perfection Spring Co. has opened a branch office in the Oliver building, Boston, Mass. Through this office the export trade and extreme eastern business will be handled.

Handling Pope Products—A new motor car concern in Baum street, Pittsburg, is the Neal, Brown & Meyers Co., which will occupy the old Kearn garage. The company will handle the Pope-Hartford and the Waverley electrics.

Busy at Kissel Plant—The Kissel Motor Car Co., of Hartford, Wis., has been forced to put on a night shift of fifty men to keep up with orders. The election of Taft served to stimulate business in all motor car factories in Wisconsin.

Remodeling Plant—The Gotfredson Brothers Co., Green Bay, Wis., is remodeling part of its big hardware store into a garage and motor repair shop. The garage will front on Jefferson street. The company is about to close for several agency lines for northeastern Wisconsin.

Success of Monogram Oils—Monogram oils were used by four of the five winning cars in the motor parkway sweepstakes, October 10; by the winning Locomobile in the Fairmount park race, Philadelphia, and also by Robertson's Locomobile in the Vanderbilt cup race.

Opens Branch Garage—The Hokanson Automobile Co., of Madison, Wis., representing the Buick, White, Ford and others in western Wisconsin, has decided to establish a branch garage, repair shop and agency in Mineral Point, Wis., to cover the southwestern Wisconsin territory.

Increases Stock—At a recent meeting of the stockholders of the Barclay Auto Co., of Minneapolis, it was decided to increase the capital stock from $25,000 to $50,000 to take care of the increasing demands of the firm's business. The Barclay Auto Co. represents the Chalmers-Detroit and the Thomas.

Big Engine Order—The Western Motor Works, of Logansport, Ind., has begun work on an order for $100,000 worth of motor car engines and is preparing to increase its working force and put on day and night shifts. It will be remembered that this order was placed some months ago contingent upon the results of the presidential election. The announcement gave occasion to a number of protests from politicians, who intimated the order was only imaginary and that an effort was being made to intimidate workmen.

Moline's Chicago Branch—W. J. Boone, manager of the Chicago Moline branch, has moved into a new place at 1220 Michigan avenue.

Linscott Selling Overlands—J. M. Linscott, who handles the Reo and National cars in Boston, has now added the Overland to his list.

Monroe Will Build—C. J. Monroe, of Milwaukee, will build a two-story public garage and motor livery at Cambridge and North avenues, Milwaukee. The building will be constructed of brick, 58 by 120 feet in dimensions.

C. M. Hall Resigns—Charles M. Hall, for 5 years sales manager for the Badger Brass Mfg. Co., makers of Solar lamps, at Kenosha, Wis., has resigned to become general manager of the American Lamp Co. at Detroit, Mich.

Will Sell Only Cartercar—The Indianapolis Auto Co., 113 West Maryland street, Indianapolis, Ind., of which C. S. Hicks is manager, states it will continue its efforts next season to the sale of the Carter cars exclusively, for which it has the state of Indiana.

First A. L. Co. Branch—The establishment opened this week by the American Locomotive Automobile Co., at Michigan avenue and Twelfth street, Chicago, is the first branch of the company. B. C. Day, formerly manager of the Chicago Winton branch, is in charge, assisted by B. C. Hamilton and R. L. Malkin.

White in Hartford—The Palace Automobile Station, F. W. Dart, manager, has taken the Hartford representation of the White steamer. This is the first time in several years that the White has been represented in that city. The Palace people will also sell the Thomas, E-M-F, Autocar, Oldsmobile and Waverley electric.

Handling the Atlas—The South End Motor Car Co. now has the agency in Boston for the Atlas car. It was formerly handled by the Harry Fosdick company, but when that concern went out of business there the agency was open for some months and the South End people took it. This firm also handles the Brush.

Pittsburg Changes—Park C. Wood, of Pittsburg, is busy establishing branch agencies for the American Roadster car. Urling & Co. will soon be located at 6112 Broad street, East End, moving from 939 North Negley avenue. In addition to its general repair business the company will now manufacture wind shields and also handle the Corbin. The Consumers' Auto Supply Co. has secured the agency in western Pennsylvania, eastern Ohio and West Virginia for the Empire tires.

Hele-Shaw Clutch Adopted—The F. B. Stearns Co., of Cleveland, O., will use the Hele-Shaw clutches manufactured by the Merchant & Evans Co., of Philadelphia, Pa., on its new 25-horsepower shaft drive car for 1909.

Tire Branch Closed—E. M. Dick, manager of the local branch of the Fisk company, at Baum and Beatty streets, has abandoned that branch, which will hereafter be consolidated with the Cleveland business of the company.

Handling G & J Tires—The Iron City Tire and Rubber Co. has secured the exclusive agency for western Pennsylvania, eastern Ohio and West Virginia for G & J tires. Thomas Hoey will be manager of the company.

Castle a Lamp Maker—F. E. Castle has acquired an interest in the Atwood Mfg. Co., the lamp-making concern at Amesbury, Mass., which will in the future be known as the Atwood-Castle Co. For the present Castle will make his headquarters in Detroit.

One More for Pittsburg—The Co-Operative Automobile Co., of Pittsburg, has been formed by L. E. Negley, I. P. Vance and A. C. Martin, of Pittsburg, with a capital of $25,000, under a Delaware charter. The incorporators are all well known Pittsburg motorists and will establish a garage in the East End.

Pittsburg Show Plans—Business men are once more getting things lined up for a show to be held at Duquesne garden, Pittsburg, the week of March 27-April 3 by the Pittsburg Automobile Dealers' Association. Dealers claim that they secured enough benefit from the direct and indirect advertising at the show last year to much more than recompense them for their outlay. Committees will be appointed shortly.

Changes on Quaker Row—The Maxwell-Briscoe Motor Co. has leased the former Rambler branch house in Philadelphia, at 207-209 North Broad street, and the Penn Motor Car Co., Mitchell agent, has moved into the former quarters of the Hills Motor Car Co. and Noblet & Fassitt, at the northwest corner of Broad and Cherry streets. With the former move came the announcement that the name of the local Maxwell agency had been changed from the Kelsey Motor Car Co. to the Longstreth Motor Car Co.—a change in name only and not in officers—with William C. Longstreth as manager. The Penn company has knocked out the partition separating the quarters of the two concerns

which formerly occupied this building, and has extended its plant all the way to Carlisle street in the rear.

Pittsburg Body Grows—The Automobile Dealers' Association of Pittsburg now has seventeen members, and it is expected that by February 1 forty members will have been enrolled.

Oakland in Indianapolis—The Independent Automobile Co. has secured the agency for the Oakland cars and opened up at 214 East New York street, Indianapolis, Ind. C. R. Newby and W. H. Harbison are the active members of the new company.

Sanger a Franklin Man—W. F. Sanger Co., 572-574 Farwell avenue, Milwaukee, has been appointed Milwaukee agent for the Franklin line. The Maxwell, represented by the Edgar F. Sanger Co., and the Franklin will occupy the same garage.

Gets More Room—The West-Stillman Motor Car Co., of Philadelphia, which handles the Pennsylvania, Mercedes, Atlas and Waverley electric from the southeast corner of Broad and Race streets, has moved to much larger quarters at 612-614 North Broad street. This move enables the company to do much shop work which formerly, owing to limited space, had to be done at the Bryn Mawr factory of the Pennsylvania.

Opens New Place—The Union Auto Repair Co., of Pittsburg, has begun business in Collins avenue opposite Rodman street, East End, and will do a general garage and repair business. The company has 6,000 feet of floor space, a modern turntable, etc., and will manufacture windshields at the Collins avenue garage. Edwin Haus, formerly connected with the Banker Brothers company, will be treasurer of the new concern.

Brock Again Resigns—Marcus I. Brock, who for the second time became sales manager of the Autocar Co. in the early part of this year, has just handed in his resignation to that company, which has accepted it to take effect November 30. Mr. Brock leaves with the good will of his company, and regrets the separation on account of the very friendly relations that have always existed between its officers and himself. He has well formulated plans for the future, though not yet ready to announce them.

Mayor Is Interested—A company headed by Mayor E. W. Clarke and George W. Worthing will erect a $15,000 fireproof garage on South Main street, Fond du Lac, Wis. The company will be a consolidation of the Worthing and Crescent garages. The Crescent Auto and Machine Co.'s garage was recently destroyed by fire and with it $250,000 worth of buildings in the business district were burned. Business men have subscribed for the stock of the new company. The new garage will be of fire brick construction, 65 by 100 feet in dimensions, two stories high, and the only wood in the entire structure will be the window and door sills. Mr. Clark is president of the well-known vehicle and implement house of E. W. Clark & Co.

Satisfied With Franklins—Of the contracts closed by the Franklin company with dealers for the sale of 1909 motor cars nearly 40 per cent will handle the Franklin exclusively.

Sourbier Retained—Edward Sourbier will continue as general manager of the Marion plant, which now is owned by the Overland company. E. C. Hardegan will be superintendent and H. C. Barnes superintendent.

Wilcox in New Role—George D. Wilcox, formerly sales manager of the Gearless Motor Car Co., has accepted a similar position with the Omar Motor Co., of Newark, N. Y., manufacturer of the Browniekar.

Garage in Allentown—The Dietrich Motor Car Co., Franklin dealer at Allentown, Pa., is building a garage, 52 by 250 feet in size, the building to be of modern design and of fireproof construction. The structure has a street front on three sides.

New Cleveland Concern—The Zenith Motor Goods Co., 262 Euclid avenue, Cleveland, has been incorporated under the laws of Ohio with an authorized capital of $25,000. The incorporators are Joseph J. Devney, L. B. LeBel, K. C. Stewart, Paul A. Iddings and A. F. Shearer. A full line of accessories will be carried in addition to the Ke-pa-go-in leather tire.

Election Helps Business—The Baker Motor Vehicle Co. reports it has received orders for sixteen cars in 1 day, for immediate shipment, and says the election of Taft has resulted in telegraphic orders from its agents throughout the United States, demonstrating that many purchasers were waiting to learn the result of the election before placing their orders.

Has Big Territory—The Pioneer Motor Car Co., Sioux City, Ia., has been incorporated at $25,000 to handle the Studebaker and E-M-F cars in Iowa and South Dakota for 1909. The territory covers in all twenty-one counties in South Dakota and fourteen counties in Iowa, and in addition to the show room a garage and repair shop will be maintained under the management of L. B. Robinson.

American Wind Shield Abroad—The demand for the Automatic wind shield abroad has been sufficient to warrant C. A. Mezger, its maker, to have the shield manufactured in the leading countries of Europe. Emil Grossman, president of the National Sales Corporation, will be in charge of the wind shield exhibitions at the London and Paris shows and will also make contracts for the manufacture of same. Mr. Grossman sailed on November 4 to attend the shows. Mrs. Grossman accompanied him on the trip.

Rockwell in Boston—C. P. Rockwell has been appointed manager of the Boston branch of Thomas B. Jeffery & Co. to take the place of V. A. Charles, who resigned recently. Mr. Rockwell formerly was assistant sales manager at the Rambler factory.

Increases Its Capital—The Bland-Mueller Auto Co., Milwaukee, Fourth street, Milwaukee, has increased its capital stock from $5,000 to $15,000. The additional issue is to provide for a general expansion of the repair, tire, livery, garage and jobbing business.

Ships Carload of Brushes—A carload of runabouts was last week shipped by the Brush Runabout Co., of Detroit, Mich., to its new representatives, the Boissevain Trading Co., of Manitoba. The agency anticipates delivery of fifty cars in its district during 1909.

Patton Out For Himself—James F. Patton, for the past 5 years superintendent of the F. B. Stearns Co., of Cleveland, has resigned to go into business for himself. He has secured quarters already at 4509 Euclid avenue and is rapidly building up a good gasoline car repair business. Upon leaving the Stearns company Patton was presented with a diamond pin by the factory heads and employes.

Von Rottweiler Manager—George Von Rottweiler will be manager of the Mercedes Motor Mfg. Co., which will start work at once on a large plant at New Kensington, Pa., 20 miles above Pittsburg, on the Allegheny river. He formerly was general manager of the Fort Pitt Mfg. Co., also of New Kensington, which made the Pittsburg Six car. The new company will manufacture for 1909 a six-cylinder 75-horsepower self-starting car, and a four-cylinder 60-horsepower model.

Ignition Company Growing—The K-W Ignition Co., of 36 Power avenue, Cleveland, has recently doubled its space and is installing additional machinery and apparatus preparatory to a larger business next year. It states it continues to show an increase of 80 per cent over its previous year's business. It is installing an impregnating plant preparatory to making K-W coils and will impregnate all K-W coils as well as the winding of K-W magnetos.

Milwaukee Move—The Excelsior Motor Car Co. has succeeded to the entire business of the Electric Vehicle and Power Supply Co., 621 Grand avenue, Milwaukee, and will occupy the same quarters. The Excelsior company will handle the Cameron and other lines not yet definitely settled upon, but including both gasoline and electrics. J. G. Bradley is president and R. Jenson, vice-president. The company will conduct a garage and repair department, the latter under the personal direction of R. Jenson.

Legal Lights and Side Lights

CONNECTICUT LAW THREATENED

There is much uneasiness at the present time among the Connecticut motorists over the future of the existing motor car law. The state legislature will be in session in January, and it is said on good authority that measures will be instituted favoring the abrogation of the statute. This seems the more likely by reason of many distressing incidents of late in which visiting cars have figured. The Automobile Club of Hartford and the Connecticut Automobile Association will do all possible to save the measure if it is to be threatened and the best of legal talent will be called upon to look to its perpetuation. The present law has been satisfactory, but there are those, of course, who would prefer to see motor cars elsewhere than on the public thoroughfares, and unfortunately this element is a powerful one. Commissioner of Highways MacDonald was instrumental in the passage of the present measure and motorists look to him to a great extent as their salvation if trouble ensues when the legislature meets.

TROLLEY COMPANY SUED

A Worcester, Mass., woman, because of an injury sustained through a motor car accident, has brought suit against the Hartford and Springfield Street Railway Co. to recover $500 damages. It appears that the woman in question was driving through the town of Windsor Locks, Conn., in a motor car with a male companion. An approaching trolley car was equipped with a brilliant searchlight which was not dimmed in accordance with the company's instructions to car crews when approaching pedestrians, motor cars or teams. The trolley car was rounding a curve and the driver of the motor car was momentarily blinded by the brilliant glare. In attempting to recover control of his machine it collided with a telegraph pole, the woman being injured. Hence the suit. The owner of the motor car was awarded $500 damages for his car. The outcome is awaited with interest.

MARYLAND IS AROUSED

Maryland motorists, backed by the Automobile Club of Maryland, will vigorously combat the proposed special tax which Governor Crothers and his state motor car commission proposes to recommend to the next legislature. An idea of the motorists' determination is gained by the following resolution which was passed at the last meeting of the club without a dissenting vote:

"Resolved, That the Automobile Club of Maryland and its members are willing to pay their full proportion of taxes on their motor cars in the manner proscribed by the constitution of Maryland, but stand unequivocally opposed to any special tax upon motorists as a class to the exclusion of the owners of other vehicles, such proposed special tax being un-American in principle and in direct conflict with our state constitution."

Osbourne I. Yellott, counsel for the club, declares that if necessary the members will carry their fight to the supreme court of the United States. A canvass of every motor car owner within the state will be made by the club to enlist his sympathy and support in fighting legislation affecting the interests of Maryland motorists. President Rowe says it is urgent that every owner should be seen personally so as to have him and his friends work in the interests of motorists in obtaining proper laws for the protection of the industry and sport in the state.

PENN'S ROAD SCHEME

President Joseph H. Weeks, of the Automobile Association of Delaware County, Pa., has prepared three new laws which will be presented to the legislature when the next session convenes in January, 1909. The first provides for the appointment by the governor of a highway commission of three, which shall determine the location of the state's highways and pass upon all applications for state aid in the building of roads. This measure also provides that where main highways of either Telford or macadam are built by the state a preservative binder shall be incorporated in the top layer of stone to prevent the blowing away of the roads in dust almost as soon as they are built. Mr. Weeks' second bill proposes that the state shall build and maintain all main highways and aid townships in constructing and caring for local roads; and his third measure provides that all money received by the state from motor car licenses shall be used for placing preservative substances on state-aid roads that are built entirely of stone or shall be built hereafter. I. Boyer Davis, of the legislative committee of the Automobile Club of Philadelphia, will submit a measure providing for an increase in the license fee. This measure, if it becomes a law, will, it is figured out, bring the state at least $150,000 from licenses. To interest legislators in these various measures a committee will be appointed to circulate petitions throughout the state. These petitions will be addressed to the senate and house of representatives of Pennsylvania, and it is expected that upwards of 12,000 of them will be filed at the state capital.

HIGHWAYS CAN BE CLOSED

The full bench of the Massachusetts supreme court has handed down another decision of interest to motorists. It overruled the defendant's exceptions in the case of the commonwealth vs. Arthur Kingsbury, who was convicted of having operated his motor car on a highway in Ashfield, from which cars were excluded under authority of a statute. The claim of the defendant was that the selectmen had no right to make special regulations as to speed of motor cars and to the use of such vehicles on particular roads including their total exclusion therefrom. He also contended that the legislative acts relating to motor cars were unconstitutional. The supreme court, however, holds that statutory regulations of the speed of motor cars running on highways are reasonable and proper for the promotion of the safety of the public. The right of the legislature under the police power, says the court, to prescribe that motor cars shall not pass over certain streets and public ways in a city or town seems well established upon principle and authority. The court further holds that the legislature has the right to delegate police powers to aldermen and selectmen. Mr. Kingsbury had taken the case to the full court for the general benefit of owners and operators of motor cars with a view to have their rights clearly defined.

THROW GOOD ROADS BOMB

A sensation was caused in Milwaukee by the attack of prominent citizens, including one circuit court judge, on the good roads amendment to the state constitution, which was voted on at the general election. It was declared to be a "plot" of the motoring interests to gain an elaborate system of motor highways at state expense. The amendment provides for state aid for highway building and improvement. The attack came just before the election and was inspired by sight of a preliminary survey for a broad country boulevard from Milwaukee westward, cutting through the links of the Blue Mound Country Club. To save their grounds, the golfers are said to have originated the story. It turns out that the survey had nothing to do with the highway, but the effect of the canard was felt. The good roads amendment was characterized as being "without doubt a gigantic scheme for the benefit of a few motor car owners, while on the surface it appears to be a change for the good of all." The members of the Milwaukee A. C. were up in arms and succeeded in disillusioning the misguided to a degree and successfully killed the charge against the plan.

Brief Business Announcements

New Haven, Conn.—D. B. Underwood, of 67 Dixwell avenue, is about to open a new garage.

San Francisco, Cal.—The Consolidated Motor Car Co. has just been appointed local agent for the Franklin.

Los Angeles, Cal.—The Elmore Motor Car Co. has removed to its new quarters at 742-746 South Olive street.

Los Angeles, Cal.—The American Auto Co., of California, has been incorporated with a capital stock of $10,000.

Los Angeles, Cal.—The Gardner Auto Spring Wheel Co. has been incorporated with a capital stock of $500,000.

Grand Rapids, Mich.—Adams & Hart, of 47-49 North Division street, have been appointed agents for the Franklin.

Austin, Tex.—The Goulson-Carpenter Automobile Co., of Corsicana, has been incorporated and will deal in motor cars.

Wilmington, Del.—The Bradford Automobile Co. has been appointed local agent for the Pennsylvania, as well as for the E. M. F.

Passaic, N. J.—The Passaic Auto Co. has taken over the garage at 161 Main avenue, formerly occupied by the P. S. Pearl Co.

Newark, N. J.—The Middleby Auto Co. is to open a garage at 457 Washington street. The concern has the agency for the Middleby.

Hartford, Conn.—The Frisbie Motor Co., of Middletown, engaged in the manufacture of motors, is about to erect an additional factory building.

Albany, N. Y.—The Albany Hardware and Iron Co. has been appointed agent for the Continental Caoutchouc Co., of New York, in the northeast and middle section of the state.

Kansas City, Mo.—The Stowe Implement Co. has been appointed wholesale agent for the Empire Tire Co. The retail end of the business will be looked after by the Jackson Motor Co.

New York—W. G. Richardson, who is the sole agent in the United States for the Lane steamer, has leased the two-story and basement building at Broadway and One Hundreth street.

Boston, Mass.—Frank L. Brown, of this city, who has been engaged in the business of renting motor cars, has filed a petition in bankruptcy with liabilities of $1,702, assets uncertain.

Los Angeles, Cal.—Fred J. Linz, who is the vice-president and general manager of the Maxwell-Briscoe-Pacific Co., agent for the Maxwell in San Francisco, has come to this city, and will take over the Maxwell business in this city. This car has been handled by the Maxwell-Briscoe-Willcox Co., but this concern retired from business on September 30.

Evansville, Ind.—The E. K. Ashby Co., the agent for the Chalmers-Detroit, has taken a lease of the building at 210-14 Upper Third street.

Pittsburg, Pa.—A petition in bankruptcy has been filed against the Pennsylvania Automobile Co., of Wilkinsburg, with liabilities of $739.48.

Rochester, N. Y.—The Omar Motor Car Co. has filed articles of incorporation, and will manufacture and deal in motor cars and accessories of all kinds.

Atlanta, Ga.—The southern branch of the White Co., handling the White steamer, is shortly to be installed in its new building at 120-122 Marietta street.

San Diego, Cal.—Chase & Ludington, local agents for the Rambler, are about to remove into their new garage on Second street, near A street. The new building is of concrete, 50 by 100 feet.

New York.—The Riverside Garage Co. has leased a plot of about ten lots on the south side of One Hundred and First street, just east of Broadway, and will erect a large garage on the site.

Kansas City, Mo.—B. L. Corlew is to give up his livery business, and in the future will devote his entire attention to the distributing branch for the Great Western car, manufactured by the Model Automobile Co., of Peru, Ind. Headquarters for the agency will be opened on Grand street, between Seventeenth and Eighteenth streets.

New York—Shepherd Motor Car Co., capital stock $20,000; to operate garage.

Newark, N. J.—Cope Co., capital stock $50,000; to manufacture motor cars and carriages.

New York—Kayton Taxicab and Garage Co., capital stock $100,000; to manufacture, deal in and operate motor vehicles. etc.

New York—Steam Motor Co., capital stock $25,000; to manufacture spark plugs, motors, engines, etc.

Greensboro, Va.—American Motor Co., capital stock $25,000; to manufacture and deal in motor vehicles, etc.

New York—Ideal Windshield Co., capital stock $10,000; to manufacture and deal in motor cars, parts and accessories.

Indianapolis, Ind.—Marion Automobile and Mfg. Co., capital stock $10,000; to deal in motor cars.

New York—Stevens-Britton-Maurel Co., capital stock $10,000; to manufacture motor vehicles and bicycles.

New York—Automobile School Supply and Publishing Co., capital stock $5,000; to deal in motor cars, teach motoring, etc.

New York—Riverside Garage Co., capital stock $10,000; to operate a garage and deal in motor cars.

Sea Cliff, N. Y.—H. J. Koehler Sporting Goods Co., capital stock $5,000; to manufacture motors cars, motor boats, carriages, wagons, vehicles, etc.

Albany, N. Y.—The Auto Import Co., of New York city, has filed a certificate of dissolution.

Newcastle, Ind.—Contracts have already been let for the erection of a number of additions to the plant of the Maxwell company in this city.

Watertown, N. Y.—The Warner Automobile Co., which for the past year has been located at 155 Arsenal street, has leased an additional ground of space of over 4,000 square feet, adjoining its present quarters.

Baltimore, Md.—In the future the Matheson will be handled in this state, Virginia and the District of Columbia by the Matheson Car Co. of Maryland, of which J. J. Mason is the president. Offices have been opened at 1002 Morton street.

Newark, N. J.—The Brick Church Auto and Supply Co., which now has its headquarters at 47 Harrison street, East Orange, and Sloane street, South Orange, has purchased a site at 157 Main street, Orange, and will erect a garage.

San Francisco, Cal.—Charles Howard, who has been the agent for the Buick in northern California, has been appointed agent for this car in the southern part of the state, and will open up a branch house in Los Angeles in the near future.

Pittsburg, Pa.—The Pittsburg Auto Top Co. has consolidated with Urling & Co., and in the future will be known by the latter name. The company has the agency for the Corbin, and will make its headquarters at 6112 Broad street, East End.

Santa Rosa, Cal.—Captain D. C. Houts and D. C. Prentice have formed a partnership and will act as agents for the Reo and Stoddard-Dayton. Fred J. Wiseman will be associated with them in the new venture. A garage will be erected for the new company early in the new year.

Rome, N. Y.—W. J. Doyle, of the Doyle Novelty Works, and A. S. Noonan, of the Noonan Garage and Bicycle Works, have had plans drawn for the erection of a theater and garage on South James street, the site of the old Bingham harness factory. Contracts will be let as soon as possible.

Hempstead, L. I.—If the plans of a large motor company in New York city succeed, Nassau county will soon have a taxicab system. The company is to build a large garage and will install twenty machines, which will be used for hacking purposes not only in this county, but throughout Long Island. Motor cars also will be used for trucking purposes.

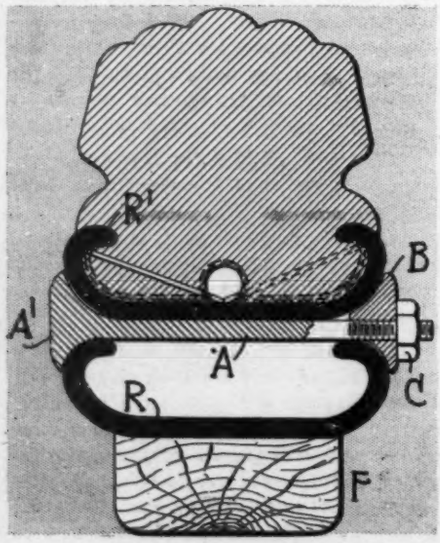
Development Briefs

IMPROVED DRY CELL CASE

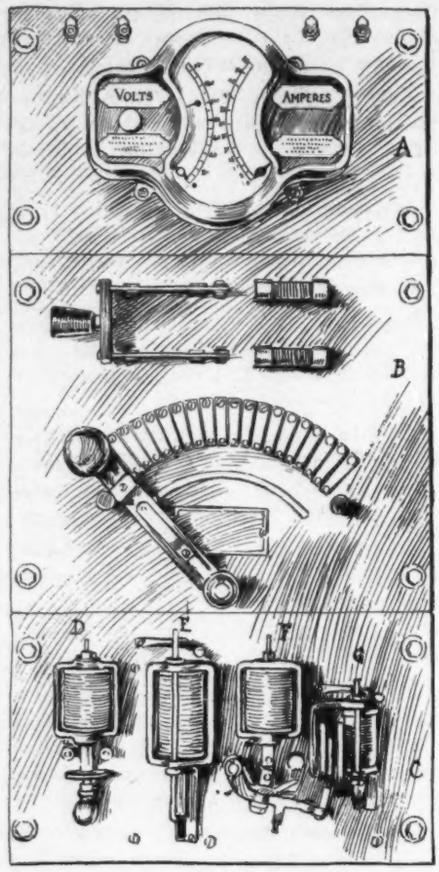
A. Hall Berry, New York city, is the manufacturer of a case for carrying sets of dry cells for ignition purposes, in which the usual wiring between the different dry cells is entirely done away with, which is ingeniously accomplished by the use of a set of four metal straps A, which hold each of the dry cells in a fixed position, and also by a bank of heavy phosphor bronze spring contacts B, C, D, E, F, etc., which form the desired connection between the cells. These spring contacts are such that by closing the lid they are all automatically made and by opening it they are unmade. With this arrangement in testing a cell you do not have to disconnect wires. The box eliminates the multitudinous wiring necessary with dry cells, and in replacing a cell there is nothing to do but take the old one and put another one in.

NEW CHARGING RHEOSTAT

The Cutler-Hammer Mfg. Co., Milwaukee, Wis., are marketing a rheostat for charging electrical vehicle bottoms, all of the different parts of which are carried on one switchboard. This switchboard panel consists of three pieces of slate A, B and C. On the face of slate A are the binding posts and a Weston volt-ammeter. On the slate B is the double knife switch with fuses, and beneath it are the contact segments and the operating lever for regulating the charging current. On the bottom slate C are the several automatic protective devices. First is a low-current cut-out D, which automatically opens the circuit should the current drop to a predetermined minimum, which prevents the battery from discharging into line in case the line voltage falls below that of the battery. At E is a maximum voltage cut-out which automatically opens the circuit when the battery voltage



SWINEHART RIM ATTACHMENT



CUTLER-HAMMER CHARGING BOARD

reaches the point at which the cut-out is set to operate. F is a solenoid switch, the opening of which breaks or makes the main line charging circuit. G is an overload circuit breaker, which automatically opens the circuit when the charging current rises to the point at which the breaker is set to operate, which insures the battery against being charged at an excessive rate.

In operation, after the battery and line connection have been made, the operator closes the knife switch on the slate B and moves the operating leves to the third contact segment, at the same time raising the plunger on the low current cut-out D, which energizes the solenoid switch F, thereby closing and permitting the charging current to reach the battery through resistances. After a current of the required amperage is in use, should it fail or reverse the cut-out D will release its plunger, thus de-energizing the solenoid switch D, which will in turn open the main circuit. The maximum voltage cut-out E operates as soon as the battery reaches its proper voltage.

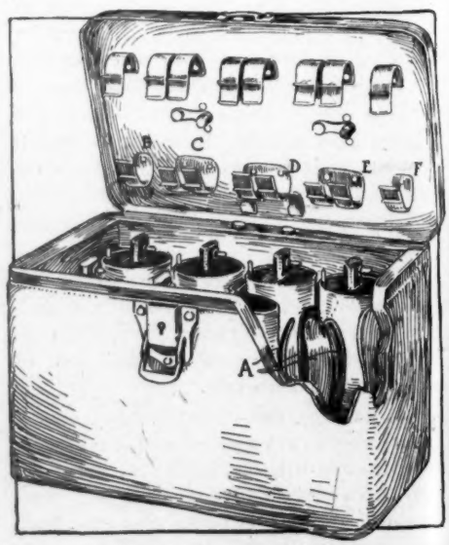
As an additional protection the operating lever is provided with an electrical interlock which prevents the operator from closing the circuit to the battery except when the lever is in the "off" position, that is to say, with all resistance in circuit.

SWINEHART RIM ATTACHMENT

By the introduction of a simple device the Swinehart Clincher Tire and Rubber Co., Akron, O., has made it possible without change of rim to use a Swinehart cushion tire on any motor car wheel and make the change in not more than 5 minutes. With this device it is possible to use cushion tires in connection with pneumatics without disturbing the wheel situation in the least. This is accomplished by a series of bolts A which fit over the conventional clincher rim R on the wheel felloe F. These nuts have a wedge-shaped end A1, which embraces the lip of the rim R as well as forms a seating for the rim R1 carrying the cushion tire. The other end of each bolt has a removable wedge B, which performs a similar function to the part A1, and is held in place by a nut C. There are eight of the bolts A which are distributed regularly around the circumference of the wheel. The rim R1, carrying the cushion tire, is particularly light so that the additional weight, when a combination of this nature is used, is very small.

WHITING'S WIRE WINDSHIELD

T. Henry Whiting, Rockford, Ill., is the inventor, patentee and maker of a non-glass windshield, a fine wire mesh screen taking the place of the glass ordinarily used. But the wind screen, as it should be called, is not a flat surface, but in halves like a two-slant roof, with a large angle. Its position is that of the roof stood on end on the dash of the car. In this position it is intended to divide the strong air currents and so not consume so much power as does the vertical glass type. Putting the halves at an angle is claimed to sufficiently break the strong air current and achieve the desired object of a windshield.



THE BERRY DRY CELL CASE